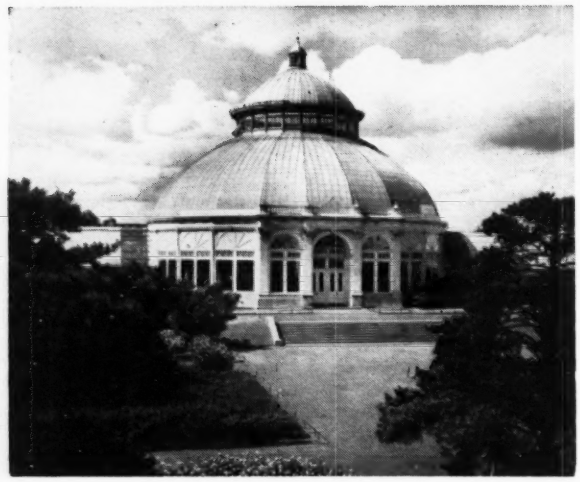
THE GARDEN JOURNAL

OF THE NEW YORK BOTANICAL GARDEN

Vol. 6, No. 6 Nov.-Dec., 1956



Chrysanthemum Show in Conservatory opens November 9, 1956.

Christmas House Show on November 28, 1956 — six houses in New York City decorated under auspices of the Volunteer Associates of The New York Botanical Garden.

Christmas Show in Conservatory opens December 14, 1956. There will be a replica of the Nativity Scene on the grounds near the Conservatory.

Theater Benefit on January 8, 1957 — Judy Holliday in "Bells are Ringing" at the Schubert Theater — under auspices of the Volunteer Associates. Contact downtown office of The New York Botanical Garden, 22 E. 60th St., for tickets.

Morning Lecture Series on January 10, 17, 24, 31, 1957, sponsored by the Volunteer Associates in the French Institute Building, New York City.

THE GARDEN JOURNAL

of The New York Botanical Garden

DOROTHY EBEL HANSELL

Editor

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AMONG OUR CONTRIBUTORS

MARGARET (MRS. ALEXANDER) PINNEY, formerly assistant to the curator of the Classical Department of the Metropolitan Museum of Art, is the daughter of the late Mrs. Jerome B. Coombs, horticulturist, author, and lecturer. Mrs. Coombs' first article on South African plants appeared in Gardeners' Chronicle of America under the editorship of the late Martin C. Ebel. It is an interesting coincidence that Mrs. Pinney's first horticultural contribution is published in THE GARDEN JOURNAL under the editorship of Dorothy Ebel Hansell, daughter of the late Mr. Ebel . . . E. J. ALEXANDER, associate curator of The New York Botanical Garden, is an authority on native plants of the Appalachians . . . T. H. EVERETT is Curator of Education and Horticulturist of The New York Botanical Garden . . . DR. ANNA H. KOFFLER, who is professor of pharmacognosy at Ohio Northern University, "has used the material presented in THE GARDEN JOURNAL on numerous occasions" . . . BERNARD P. CHAMPON recently spent several weeks in the vanilla growing district of Madagascar, gathering information contained in the article, "The Orchid That Flavors." Born in France, educated in the United States, Mr. Champon has spent his entire business life in the vanilla trade. He is a vanilla agent and broker, heading the firm of L. A. Champon and Company of New York City . . . HOWARD W. SWIFT is assistant to the Curator of Education and Horticulturist of The New York Botanical Garden . . . EDWARD O. GANGSTAD is Agronomist at the Texas Research Foundation, Renner, Texas . . . GERTRUDE B. FOSTER is editor of Herb Grower Magazine.

CREDIT FOR ILLUSTRATIONS

We are indebted to the Display Committee—Mrs. Charles Burlingham, Mrs. Richard Meredith, Mrs. Donald B. Straus—for the selection of the front cover illustration "Evergreens in the Holidays" from American Agriculturist 1866; photo of original plate by E. N. Mitchell; p. 170, Hugh Pinney; p. 171, Sequoia Nurseries, Visalia, Cal.; pp. 173, 174, 175, courtesy E. J. Alexander; pp. 176, 177, 178, 179, T. H. Everett; pp. 181, 182, 183, Vanilla Growers' Association of Madagascar; pp. 185, 186, 187, E. N. Mitchell, of actual specimens collected by H. W. Swift; pp. 188, 189, E. O. Gangstad; p. 190, Montreal Botanical Garden; p. 191, St. Mary's College; p. 192, upper left, S. G. Cutting, upper right, Superior Nursery Co., lower left, Bodgers Seeds, Ltd., Lompoc, Cal., lower right, S. F. Bridge, Jr.; p. 193, upper, Mt. St. Mary, lower, Mt. Vernon Ladies' Assn. of the Union; p. 194, upper, Platts Garden Store and Nursery, Branford, Conn., lower, W. E. Wright; p. 195, upper, Buena Park Greenhouses, Inc., La Habra, Cal., lower, George Spalding; p. 197, photo by E. N. Mitchell of original from Flowers and Flower Festivals, W. A. Barrett, 1868; p. 203, Paul F. Frese, White Plains, N. Y.

The Garden Journal of The New York Botanical Garden is published bimonthly by The New York Botanical Garden, Bronx Park, New York 58, N. Y. Printed in the U. S. A. Re-entered as Second Class Matter, February 1, 1951, at the Post Office at New York, N. Y., under the Act of August 24, 1912. Annual subscription, $2.00. Single copies 35 cents. Foreign countries and anywhere outside the continental United States, 50 cents a year extra.

Miniature Roses

By Margaret Pinney

TO A GOOD MANY PEOPLE, the collecting of miniature roses is just a rather peculiar pursuit. Many times friends have said to me, "Why do you bother with those ridiculous little flowers? Why not have something big and splashy that you can see for all your work?" Well, dinner-plate dahlias and seven-inch 'Peaces' are for them, and have a place in the world, too. But in a dainty, small universe, a little tidy rock garden or a narrow border, miniature roses can compete with any flower growing. A great many of them can be grown in a very small space. They come in nearly all the colors of their larger relatives, and their aspect is as varied. Their requirements are few, they lend themselves as well as do larger roses to arrangement and decoration. Nearly all of them have a longer blooming period than do most big roses, starting in early May and often continuing into December in the New York zone. They are vigorous and rugged, surprisingly so for plants so delicate in appearance.

"Miniature rose" is a rather loose term, embracing several types. In general it is taken to mean the dwarf *Rosa chinensis minima* and its many entrancing hybrid children. Most of these are of a definite, recognizable type; two to twelve inches tall, slender pale green stems, soft green toothed leaves; one-quarter to one-half-inch buds; flowers of five to a hundred petals, one-half to two inches across; few thorns, faint or unnoticeable odor; continuous bloom. "Miniature rose" does not mean size of flower alone—many other roses, such as multifloras and the old-fashioned pompons, have flowers as small. It does not always mean dimunitive size — I have seen a 'Rosina' in soil too rich for it, which was two feet tall. It means the tiny compact bush, neat and dainty, best exemplified by *Roulettii,* the ancestral hybrid *chinensis minima.* Several of my own collection such as 'Baby Gold Star,' *"centifolia minima,"* 'Baby Lillian,' 'Baby Masquerade,' 'Mrs. W. H. Cutbush' and others are not of the *chinensis* type, yet are undoubted miniatures. Some are dwarf polyanthas. Yet all dwarf polyanthas could not be included, as many are large bushes, dwarf only in size of flower. Some of the later descendants of *Roulettii,* while even smaller, are beginning to draw away from the definite *chinensis minima* type. The smallest of my little roses is 'Snowflakes,' about two inches tall, the largest is 'Cameo,' with a height and spread of about sixteen inches. The flowers range in size from one half to two inches. In color they range from a black crimson through scarlet, geranium, magenta, fuchsia, lavender, rose, many shades of pink, apricot, orange, yellow, and cream to pure white. Several are two-toned or of mixed shades.

In the eighteenth and early nineteenth centuries, there were said to be about one hundred varieties of miniature roses grown in Europe. Most of these seem to have died out, though it is surmised that *Roulettii,* 'Pompon de Paris,' *"centifolia minima"* and very possibly 'Estrellita' may be survivals. At present, as far as I can discover, there are again close to one hundred in circulation; most of them bred in the last twenty years. In addition to the named and patented varieties, there are dozens of miniatures of rather indefinite type floating around — most of them unnamed.

I have acquired several and shall describe them to show what one is up against in trying to limit and define "miniature roses." The most interesting is a seedling from *Rosa Moyesii* which I raised in 1950. It has most of its parent's traits but is only a foot tall instead of the usual seven to ten. It has the many red stems, numerous small thorns, plus briary leaves. The eight-petaled, single flower is dark crimson, three inches across, with a lavish display of bright stamens. It has a pleasant scent, blooms in May, and is non-remontant. It suckers persistently. The hips are the shape but not the color of *Moyesii's.* I raised three small bushes this year from a package of seeds from Vaughan's Nursery labelled Baby Rose. ("The smallest roses are the Baby Roses, a strain of *R. multiflora* easily grown from seed . . . it is really a baby form of a polyantha type." S. Hamblini, American Rose Annual 1944. p. 59.) One bloomed exactly seven weeks after the seed was put in the ground, when it was two inches high — a tiny white single flower of five petals, one-fourth inch wide. I cannot call it striking or significant or even worthy of a name of its own, but it is a sturdy Lilliputian at its now great age of eleven weeks, and an enthusiastic bloomer.

A number of years ago I raised some seeds bought from Pearce Seed Company as "Baby Rose. Multitudes of tiny blossoms, dominantly in white and blush, but ranging into pink and rose, too." I kept four bushes of these, single and double white, single and double pink. No deeper pinks materialized. The bushes grow about fifteen to eighteen inches tall, with thick, light green canes and a few long, pale thorns. They blossom constantly from May to hard frost, with tiny flowers three-quarters of an inch across, in clusters of a dozen or more. The single ones have five notched petals, the double ones about thirty. They have a strong multiflora fragrance. When I visited Pearce Nursery one time, Mr. Stark told me that they were of Italian origin called *"Rosa polyantha nana."*

A seedling of a 'Juliette,' raised last year, has no resemblance whatever to its mother, except that it is a rose. It is a large, sprawling growth, looks like a multiflora, and shows no intention of blooming.

As for their culture, most of the experienced breeders recommend the same care for miniature roses as for larger roses. They should be, and mostly are, grown on their own roots. The soil should not be too rich, as they are apt to grow large and lose their fairy-like

Miniature rose 'Frosty' in the author's garden, "Whippoorwill," in Armonk, New York

character and charm. In general I agree with this, except that I stick to rose dusts and do not spray. Even spraying with a diluted formula is apt to make the miniatures lose leaves and buds. The ground should never be allowed to dry out; but, on the other hand, too heavy mulches are apt to produce black spot. After trying various mulches, I have found that the miniatures are happiest with light flat stones over their roots.

After many trials, I have found the following method of planting best: a foot-deep hole dug with post hole digger filled with the following mixture: one part peat moss, one-half part dried cow manure, one part poor garden soil, one part sand, one part compost. They grow well in this soil mixture but do not become gross. A gross fairy! Perish the thought. The advantage of the separated holes full of soil mixture is that the moles do not find many worms in the no-man's land in between. In my new garden against a western wall with about a half day's sun, the miniatures flourish as never before.

For winter protection I have tried hilling up, large glass jars, and wire glass frames over them. For all except new slips, I am inclined to think that the hilling with loam is best, if care is taken to see that the frost does not heave them. With jars or frames over them, they keep their leaves all winter and at times even bloom a little. It is delightful to see them growing under the frames, but I believe that such persistent growers and bloomers need a little rest. Groundcovers are not advisable; even the flat-to-the-ground mazus ramps over their tiny stems and leaves.

My descriptions may often differ considerably from those in the growers' catalogues, but they are written after long observation and many checks. My experience of miniature roses is that they are extraordinarily sensitive to environment, changing color, habit of growth, and even shape in a strange soil and neighborhood. The "babies" brought at different times from England have, in some instances, done this under my own eyes. The behavior of the plants in my Scarsdale garden, twelve miles south of here, was also somewhat different from that in their new bed in Armonk. Miffs like 'Baby Lillian' perked up, and some sturdy specimens developed neuroses.

The following is a description of the eighty-two varieties of dwarf roses I have growing in my garden, plus all the descriptions I have been able to gather from books and catalogues. I should be more than glad to be told of any others I may have missed.

ANNY H.C.M. (Hybrid *chinensis minima)* This is a rather delicate small plant with dark leaves, slender green stems, and no thorns. It grows about six inches tall. The flower is pale pink, one half inch wide, with about thirty petals. The bud is also pale pink, pointed, quite mossy, with long leafy sepals. Bred by Pedro Dot, 1949. There was no description of it in Mr. Hillier's (Hillier and Sons, Winchester, England) catalogue.

BABY BUNTING H.C.M. This is a slightly coarse, half vine-like plant with broad, spreading branches. The light magenta flower is one and one-half inches across, quite pretty, with about twenty wide petals and an expanse of yellow stamens. The inch-long bud is pointed and dark red. The leaves are large and dark with a few tiny thorns on their backs; large pink ones on stems. Origin and parents not known to me.

BABY CRIMSON. See 'Perla de Alcanada.' As far as I can see, these are identical. 'Baby Crimson' probably takes its name from 'Wheatcroft's Baby Crimson,' the name given 'Perla de Alcanada' when Wheatcroft's Nursery took over the sale of it in England.

BABY FAURAX. This little rose I have never seen; it is sold by Bermuda Nurseries and Hennessey as a dwarf polyantha (Ann P. Wylie, "History of Garden Roses" Part II, Journal of the Royal Horticultural Society, Jan. 1954, p. 13, says that the dwarf polyanthas are descended from a cross between the wild Japanese *R. multiflora* and a dwarf pink China). Hennessey says, "They will average not more than a foot tall," and that they are extremely hardy. However, I have tried several times to buy them and the dealers always report "out of it" or "crop failure." The flower is said to be violet-blue or small double lavender, constantly produced. Origin, Lille, 1924.

BABY GLORIA is a polyantha, six to eight inches high, with large, salmon-red flowers; a sport of 'Gloria Mundi,' and originated by Bohm in 1936.

BABY GOLD STAR H.C.M. Pat. 407. (R. E. Shepherd, Flower Grower, Feb. 1950, p. 52, believes that this could be classed as a dwarf polyantha.) It is larger than the minima type, with heavy stems, big leaves, and many busi-

ness-like thorns. The pointed light yellow bud is three-quarters of an inch long. The flower is pale cream shading to light yellow in the center and is about an inch wide, with a slight fragrance. It fades to white very quickly in bright sun. It has in my experience about thirty petals, though *Modern Roses* IV, p. 16, says twelve to fifteen. The leaves are thick and glossy. Its parents are 'Eduard Toda' X *Roulettii*. It was bred by Pedro Dot as 'Estrellita del Oro' and introduced into the United States by Conard-Pyle in 1940. This rose seems to vary in color more than any I know. I have had clones from three different sources—Conard-Pyle, P. J. Roehrs, and Stern's Nursery —and they are quite different. The first is very pale, hardly darker than cream, the second is a good pale yellow, and the third a delightful deep yellow with peach and apricot tones. Otherwise the type, size, foliage, and thorns are identical, and I have no particular reason to assert that they are not the same.

BABY LILLIAN H.C.M. is larger than the type, eight to fifteen inches tall, but is a dainty slender little plant with thick pale thornless stems and large oval buds of a deep coral-rose. The slightly paler fragrant flowers, three-quarters to two inches wide, have about thirty petals and open wide to show the stamens. The leaves are glossy light green, always with a good deal of red in them. 'Baby Lillian' is a persistent bloomer from early May until late November. Of all the little roses it is my favorite because of its exquisite color. I do not know its origin.

BABY MASQUERADE is a not-so-miniature seedling of 'Peon' by 'Masquerade' and was developed by Mathias Tantau in 1955. It is a delightful, vigorous, fifteen-inch plant with all the virtues and vices of its mother. The flowers, one to one and a half inches wide, go through the wonderful color changes of 'Masquerade' Sr. They roll back their petals like a cactus dahlia and the faded ones hang on deplorably. They have about thirty-six petals and are short lived but constantly produced. The foliage is dark and glossy, with the new shoots deep red.

BIT O'SUNSHINE H.C.M. Pat. App. For. Described as "The brightest yellow miniature ever offered. Brilliant shapely yellow buds in profusion on a bushy twelve-inch plant. Fragrant, everblooming. Excellent for growing in a pot. Sometimes in cooler weather outer petals are tinted or splashed with red. Bud and flower resemble 'Eclipse' in form but brighter yellow. About twenty petals. Tea rose fragrance. Plant vigorous, foliage clean, green and abundant." Sequoia. Fall '56. Parents are 'Copper Glow' X 'Zee.'

BLANC PARFAIT is said to be a miniature form of *Rosa alba,* the old cottage or York rose. It is a small white pompon.

BO-PEEP H.C.M. Pat. 976, is the offspring of 'Cécile Brunner' and 'Tom Thumb.' It is quite small, five to eight inches tall, with large medium green leaves. The pale rose-pink cupped blossoms, with darker shading in cool weather, are three-quarters of an inch wide. They grow in spreading clusters and have a suggestion of perfume. They have anywhere from twenty-five to eighty petals, with no stamens visible. 'Bo-Peep' was bred by de Vink and introduced into the United States in 1950 by Conard-Pyle. It is a happy, healthy little creature, easily pleased.

BRIGHT JEWEL is said by Lamb Nursery to be "maybe *Rosa alpina.*" According to *Modern Roses* IV, p. 276, *R. pendulina,* which is synonymous with *Rosa alpina,* is "Alpine rose, Fl. to 2 in. diam. pink, usually solitary or 2-5 together, May-June. 3 ft. C. and S. Eu." A. W. Bennett, *Flora of the Alps,* I, pp. 98-100, describes it as "*R. Alpina L.* (Pl. 33) with numerous sub-species; a small, erect bush, corolla bright red, the flowering branches usually without spines, leaflets 7-11, with scattered glands, alpine, frequent." Bennett's plate 33 shows a single, five-petaled flower with wavy edges, many yellow stamens, and a green central boss. Large stipules at bases of leaves. The Royal Horticultural Society *Dictionary of Gardening* Vol. IV, p. 1818, describes *R. pendulina,* synonymous with *R. alpina* as "Upright, 3-5 feet high, young stems reddish, normally smooth, leaflets 5-9 or 11, stipules conspicuous—flowers rose-purple, solitary or few, 1½-2 in. across. June — distinct by its smooth, cane-like, reddish stems." 'Bright Jewel' seems to me to be pure hybrid *chinensis minima* type. It grows about three to six inches tall (not three feet). Its flowers are about one-half inch wide,

Miniature rose 'Frosty' as a pot grown plant at Sequoia Nurseries in Visalia, California

in clusters. They are of a brilliant rose-pink, with a yellow central line more or less pronounced. They have about twenty petals with broad rounded tops, each with a tiny point in the center. The buds are pointed dark crimson; leaf stipules small and unnoticeable, leaflets three to seven. Everblooming.

CAMEO (miniature polyantha). The largest of the roses described here, 'Cameo' grows to sixteen inches, with coarse pale green stems, leaves and thorns. It bears constant clusters of delightful rose-pink cupped flowers from frost to frost. The buds are exquisite. The one and one-half inch flowers have about twenty-five petals. Its one fault is the untidy habit of holding on to the faded petals. It was originated by de Ruyter, and is a sport from the dwarf polyantha 'Orleans Rose.' Jackson and Perkins introduced it to this country in 1932.

CL. CAMEO. See 'Pink Cameo.'

CANDLE FLAME H.C.M. New in 1956, of the new type originated by Mr. Moore of Sequoia Nurseries with low stature and large single flowers. The pointed bud is about an inch long, of lovely shape and a deep apricot-orange. The five petals unfurl to a coppery yellow two-inch flower and spread flat to show the attractive orange-brown stamens. It has a noticeable sweet perfume and long yellow thorns. The spreading bush is three to seven inches tall with large dark green dull-surfaced leaves. It is an exquisite rose, one of the best. Its parents are 'Soeur Therese' X 'Julien Potin' X 'Eblouissant' X 'Zee.'

CAROL ANN. Pol. Pat. 707, is of the same general type as 'Cameo,' a low-growing bush supposedly twelve inches high or less. It has tight clusters of double cupped flowers, one to one and a half inches wide, of an unfading orange-salmon. It is a persistent bloomer. It is a 'Marianna Kluis' superior sport, was produced by A. Kluis, and introduced to the United States in 1940 by Gerard Klyn, according to *Modern Roses* IV, p. 37.

CENTENNIAL. H.C.M., is advertised (Spring Hill Catalogue, Spring 1956, p. 49) as being "Magnificent velvety black-crimson with claret-wine shading." It is actually a good, medium dark crimson with white bases to the petals. The flowers are double, one inch wide, growing singly, with about sixty petals. The leaves are pale green, slightly larger than type. I cannot distinguish it from 'Centennial Miss.'

CENTENNIAL MISS. H.C.M. Pat. 1301 (American Rose Annual 1954 says Pat. 1194). It is one of Sequoia's delightful small bushes, about two to four inches high with a double, sixty-petal crimson flower one inch wide. The bud is dark red, nicely pointed. The leaves are large and pale green. It is practically thornless. The flowers, which are very fragrant, open wide to show a few undeveloped petals in the center. The parents were 'Oakington Ruby' and an unknown variety. It is said to be a vigorous, bushy plant, blooming continuously, but I have not found it very healthy in my garden and climate. The American Rose Annual 1954, p. 182, "Proof of the Pudding" says, "Valuable collector's item for its odd mottled rose and pink coloring" and that its height is fifteen inches. Mine have never shown any color shading and stay under four inches.

"CENTIFOLIA MINIMA." Dr. R. C. Allen in a letter written to me dated November 18, 1955 says, "The name *Rosa centifolia minima* has no botanical standing, because a plant for such a name has never been authentically described nor an herbarium specimen of a type plant recorded. The name was given by Roy Hennessey to a dwarf form of what appeared to be *Rosa centifolia* found growing in a garden in his vicinity. It might well be an old named variety such as 'Pompon de Bourgogne' or a form of *Rosa centifolia pomponia.*" This *"Rosa centifolia minima"* I bought from Mr. Hennessey years ago. It is a tiny replica of a rose labelled *centifolia* which I saw last June in the Edinburgh Botanical Gardens. It is a rather rangy little bush, eight to twelve inches high, with a creeping root-stock, large pale green leaves, and many small thorns. It blooms but once, in June. The flowers are about an inch broad, very double with eighty to a hundred petals. They are a lovely soft pale pink, delightfully fragrant. ("The Burgundian rose, *R. centifolia* var. *parvifolia,* is perhaps a hybrid with *R. Gallica.* It was known before 1664. The flower is no larger than a dime, very double pale pink. One form is in the trade here, but others are still known in Europe." S. Hamblin Am. R. Ann. '44, p. 59.)

CHINA DOLL. Flor. Pat. 678. This plant is one of the larger miniatures, really almost too big to be considered a dwarf, as it sometimes grows to eighteen inches. I have included it because its father is 'Tom Thumb' X 'Mrs. Dudley Fulton.' It is bushy and of profuse bloom with one to two-inch, cupped flowers nearly China rose in color, with bases of petals mimosa-yellow. They have a slight fragrance. The number of petals is twenty to twenty-six. It was bred by Lammerts and introduced in 1946 by Armstrong Nurseries.

CINDERELLA H.C.M. Pat. 1051. This popular rose is one of the smallest, growing from one to six inches (American Rose Annual 1954, p. 189, gives the average height as one inch). It is bushy and upright, with dainty pale bluish leaves and no thorns. The one-inch flower has a faint spicy odor; the color is white tinged with very pale flesh-pink. The delicate little pointed bud is light peach. It was bred by de Vink from 'Cecile Brunner' and 'Tom Thumb' and brought to this country by Conard-Pyle in 1952. In the American Rose Annual's 1954 and 1956 "Proof of the Pudding" it is rated at 9.3.

CORALIN. This miniature originated by Pedro Dot was given a Certificate of Merit in 1955 in the Rose Trials at Geneva, Switzerland. It is said to have red flowers. 'Coralin' is from 'Mephisto' X 'Perla de Montserrat.'

CUPIDO H.C.M. This is a compact little shrub about six inches high, with pale green leaves; the flower is described as "a very pretty new pink and white from Holland." I purchased it from the Bermuda Nurseries, but it arrived in bad shape and soon passed on: 'Cupido' was bred by G. Maarse, who has not divulged its origin.

CUTIE H.C.M. Pat. 1302, is a tiny and with me rather delicate plant. The Sequoia Nurseries, where it originated, say that it grows ten inches and is "probably the freest flowering of all miniatures." 'Cutie' does not like me or my garden that well, and is rather a sparse bloomer here. (American Rose Annual 1956 "Proof of the Pudding," p. 190 gives it a rating of only 5.8.) It is a compact little rose, three to five inches with me, with clusters of half-inch, very bright pink flowers of about

(Continued on page 175)

Treasure House of American Plants

By E. J. Alexander

IT APPEARS TO BE a weakness of American gardeners to think that any American plant is an unfit horticultural subject, and that only foreign plants are fit for cultivation. Yet, if one takes a look at the general run of flowering shrubs, it is surprising to see the number of them that are native; and except for mountain-laurel and great rhododendron, practically all of them are restricted in nature to the southern Appalachians—and even those two reach their greatest development in that area. It is these Southern Appalachians which have been the source of America's greatest gifts to horticulture, in spite of the much vaunted flowers of the western United States. The westerners, while spectacular in their homeland, are too delicate and unadaptable for the gardens of other sections.

Our eastern plants are a much hardier and more versatile stock, able to stand the hardships of cultivation in many and varied climates. Their "blood," entered into hybrids, carries its strain of hardiness with it, making plants which can endure cold winters and survive hot summers—provided the water supply is fairly constant.

The southern Appalachian mountains, extending from the Potomac River into northern Georgia, with the second highest rainfall in the United States, have been, since the times of early exploration, the chief source of American plants sent or taken to Europe for cultivation. These mountains, geologically one of the world's most ancient ranges, have a high percentage of endemic plants (plants with restricted area of occurrence), and most of these have become established horticultural subjects, and have won their way even into American hearts and gardens.

One of the best examples is the "catawba hybrid" rhododendrons, most dependable and hardy of the rhododendrons, and ranging in color from white through all the shades of pink and purplish reds. There are no clear reds in this group, and no yellows. These are the result, mostly, of crossing *Rhododendron catawbiense* of the southern Appalachians with the more wide-ranging *R. maximum*, and with *R. arboreum* of the Himalayas. The hardiness comes from the two American parents, and the range of color from the Himalayan one. For early bloom and great hardiness, the endemic *R. carolinianum* is unequalled, although its color range is only tones of pink and white. For evergreen shade plantings, *R. maximum* is unsurpassed, it blossoms even in deep shade—and is hardy up into Canada. Its flowers are usually white, but pale pink forms are known.

An equally fine group of plants is the "Ghent hybrid" azaleas—hybrids of *Rhododendron calendulaceum*, the flame azalea of the southern Appalachians, with two other natives, *R. roseum* and *R. nudiflorum*, and with *R. luteum* of the Caucasus region. These are the most dependable and hardy of the azaleas with great color range through all

Flame azalea, the number one American shrub, its flowers varying from palest yellow to red, but most typically flame-orange, makes great masses of glowing color on the mountainsides in May and June

Iris cristata, most easily grown of the dwarf irises, common in woodlands all over the mountain and piedmont sections of the southeast. Although a rapid spreader, still a choice rock garden subject.

Rhododendron catawbiense

the tones of yellow, orange, pink, and orange-red—something no other azaleas give. *Rhododendron calendulaceum* itself is the highest rated of American shrubs, occurring in the wild in a range of color from palest yellow through all tones of yellow and orange and even orange-red. When the two white-flowered, delightfully scented native azaleas, *R. viscosum* and *R. arborescens,* are added, almost the entire color range of azaleas is included in the native kinds. Rare as a wild plant in the North Carolina mountains is the "pink-shell" azalea, *Rhododendron Vaseyi,* whose light pink flowers in early spring, before its leaves come out, make such delicate cloud tracery in woodland or light shade plantings—the foliage turns red and orange in the fall.

Leaving the rhododendrons, but still in the Heath Family, can anything surpass *Leucothoë Catesbaei* as a low evergreen shrub for shaded areas? This is another southern Appalachian endemic. Of very restricted natural range is *Pieris floribunda* which, while considered inferior to *P. japonica,* is still a valuable and hardy shrub. Just coming into its own for ornamental planting is the sourwood or sorrel-tree, *Oxydendrum arboreum,* a small tree to thirty feet with glossy deciduous foliage and at its branch ends, loose sprays of lily-of-the-valley-like flowers in June. This is followed in the autumn by coloration of red and orange of the leaves before they fall, thus giving a two-seasonal value.

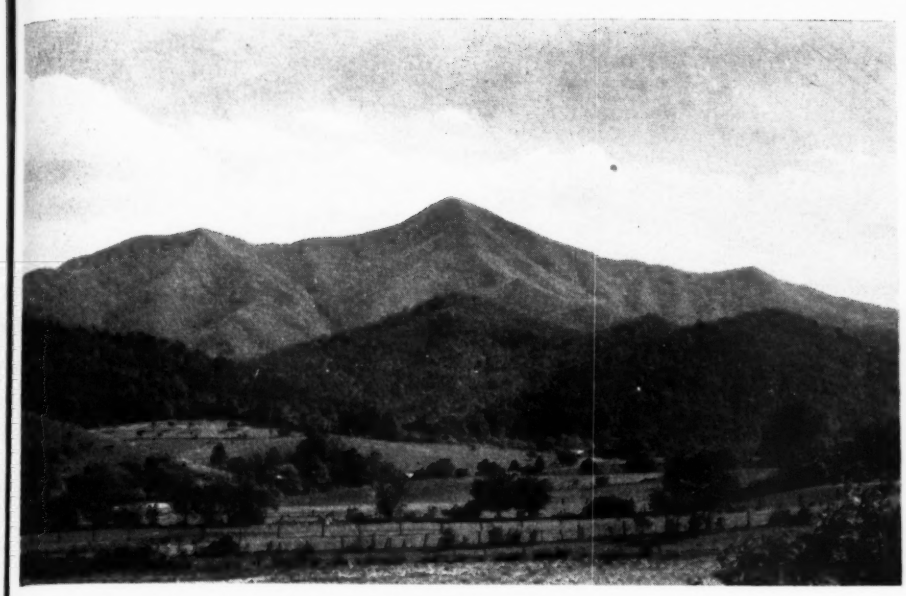
Still in the Heath Family we have the great group of vacciniums, the blueberries, which, in addition to their ornamental value for flowers and autumn color of red and orange, are also of value for decoration of the inner man as, bear witness, blueberry or huckleberry pie.

Some highly ornamental trees and shrubs of the Bean Family, all endemic to the Southern Appalachians, are the yellow-wood *(Cladrastis lutea)* which is a beautiful tree with smooth, silver-gray bark and hanging flower sprays like white wisteria, and the robinias which are all-American. The shrubby, pink-flowered ones are from the southern mountains; even the large tree white locust, so fragrant and beautiful in flower, had its origin in these same mountains. In the same Family is the eastern American redbud or Judas tree, native of the southern Appalachians. Though its flowers are a little paler in color than the shrubby Chinese one, the American redbud is always a tree, and is much more hardy.

From this same region comes the Carolina hemlock, a more beautiful tree than the more common Canada hemlock, the Fringe tree *(Chionanthus),* the Silver-bell *(Halesia),* the summer-flowering, shrubby hypericums, several kinds of mock-orange *(Philadelphus),* one of the finest stewartias *(S. pentagyna),* and several magnolias which are of more value as foliage trees, and more hardy than the showy-flowered Asiatic ones.

There are also some valuable ornamentals among herbaceous perennials, most important being *Thermopsis caroliniana* with its long wands of yellow flowers; the brilliant red Oswego tea *(Monarda didyma);* the wild bleeding-heart *(Dicentra eximia)*; the blood-red fire-pink *(Silene virginica)*; the hardy *Yucca filamentosa;* the wild sennas *(Cassia marilandica* and *C. Medsgeri);* several species of *Phlox* (sepecially *P. ovata* and *P. stolonifera)*; the two most choice of dwarf irises *(I. cristata* and *I. verna)*; and lastly *Shortia* with its romantic story of loss and rediscovery.

Summit cone of Mt. Pisgah, covered with great colonies of rhododendron, *Pieris floribunda* and mountain-laurel



Mt. Pisgah in the North Carolina Blue Ridge Mountain, altitude 5,749 feet. This, the most perfectly shaped peak of the southern Appalachians, is noted for the great variety of ericaceous shrubs which make their home on its slopes and summit.

But, what are they like, these southern mountains, which, considering the small area they cover, have produced such a number of important horticultural subjects. They are not spectacular, like the Alps, the Rockies and the Sierras, not so lofty as the Andes and the Himalayas. They are homey mountains, less than seven thousand feet in altitude, blanketed over their summits (except for a few age-worn rocky ones) with green forest and dense undergrowth and moss. They are clothed in fog and mist, with many thousands of streams and waterfalls. They glow with yellow, orange, and red in the autumn; and when the winter snows blanket them, they do not stand out stark and white, but still with their shrouds of fog, haze, and mist, live up to their names of the Great Smokies and the Blue Ridge.

MINIATURE ROSES (from page 172)

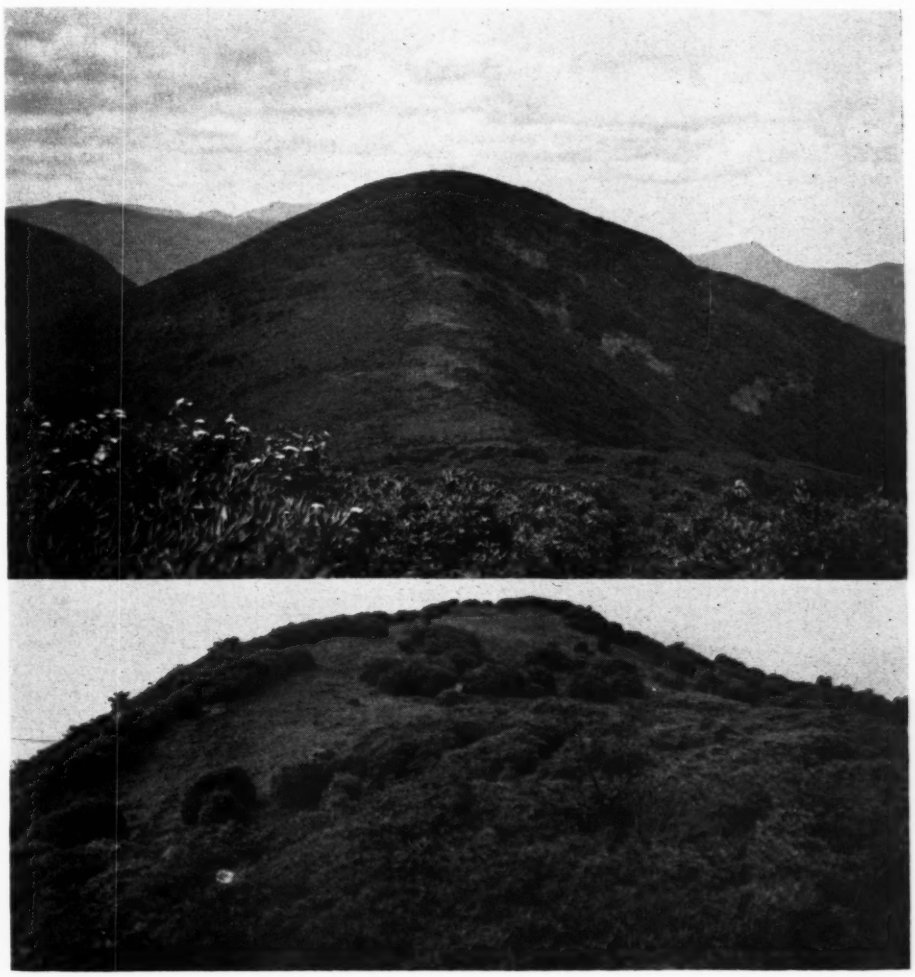
fifteen petals. The flowers have a very slight fragrance. The bud is dainty, and pointed, very dark pink. The soft pale leaves turn orange-bronze in the fall. 'Cutie' is almost thornless. It is from 'Dancing Doll' X 'Oakington Ruby,' and was introduced in 1952. In spite of its delicate habit here, I would not be without it. It is worth while taking some trouble to grow it.

DIXIE. See 'Perla de Montserrat.'

ESTRELLITA, called H.C.M., though it is a big spreading vine-like plant with heavy stems and large leaves and thorns. It grows from about ten to fourteen inches high. The old leaves are leathery and glistening, the new ones pale and soft. The half-inch flowers grow in large clusters and are constantly produced in great numbers. The buds are particularly attractive, with deep red tints. 'Estrellita's' chief fault is its habit of holding on to the brown, faded flowers. *Modern Roses* IV, p. 87, says: "Origin uncertain; said to have been grown in U. S. for forty years or more. Small, white; cluster on four to six-inch stems." Perhaps mine is a different variety. I bought it from Wayside under this name in 1950. (American Rose Annual 1956 "Proof of the Pudding," p. 190, gives it a rating of only 5.8.)

ESTRELLITA DEL ORO. See 'Baby Gold Star.'

(Continued on page 184)



Upper. Craggy Dome, altitude 6,300 feet, with its open heath-hold, home of *Rhododendron catawbiense*, which forms the large thicket-clumps scattered over the grassy hold

Lower. *Rhododendron catawbiense* grows in large thicket-colonies on mountains above 5,000 feet altitude. This one is on Roon Mountain, altitude 6,287 feet.

Fall leaf raking provides a rich source of organic matter for turning into good humus

To burn leaves is a destructive practice, it wastes that which should enrich the soil

SOME SOURCES OF HUMUS

By T. H. Everett

ONE OF THE most important changes in the amateur gardener's concept of soil management that has taken place during the past two decades is a greatly increased awareness of the importance of organic matter. Only a small proportion of amateurs now feel that commercial fertilizer alone is sufficient to maintain soils in productive condition; even novice gardeners are likely to know that they should use peat moss, leafmold, compost, and similar humus-forming materials. The reasons for this present consciousness of the importance of humus are not difficult to find. Facts long known to soil scientists and to experienced farmers and gardeners, as well as newer discoveries about the part humus plays in the economy of the soil, have been brought to public attention in a number of reliable books and have been stressed by writers and lecturers on gardening topics.

Conservationists, wisely concerned about the maintenance and improvement of soil fertility on a world-wide basis, have reached a vast audience through their popular writings and lecturings. The practices they advocate have so impressed their readers and hearers that many have attempted to adopt or adapt them as a means of improving the small patches of earth they call their gardens.

Rapid dissemination of theoretical knowledge and of technical know-how in any field is likely to produce extremists; the add-organic-matter-to-the-soil school of soil management is no exception; faddists galore have appeared. Most vociferous of these are the "organic gardeners" who advocate the use of organic fertilizers to the exclusion of "chemical" fertilizers and advance many wild claims to support their points of view. Discussion and argument with a dedicated organic gardener usually produces heat rather than light—such people are beyond reason, logic means little to them, theirs is a religion.

Yet, even organic gardeners have played a worthwhile role in stirring up an awareness of the importance of humus. They are preachers and proselytes who, for every full convert they make, stir up some interest in their cult in a hundred others—and a little interest in organic gardening is good to have, provided other gardening techniques, such as the use of commercial ferti-

To make rich leafmold collect the leaves of deciduous trees and shrubs and pile them

Be sure the leaves are moist when piled and compact the heap by treading it firmly

Later turn the heap. In a year or two the leafmold will be ready for garden use

Modest amounts of leafmold often can be collected from low spots in wooded places. Look for material that is half-decayed

Rub leafmold through a half-inch mesh, if it is to be used in seed sowing and potting soil mixtures for growing plants indoors

After it is sifted good leafmold is of even grade and quality, not powdery or muddy, but flakey, with leaf texture still showing

lizers, are not abandoned. The best soil management practice involves the use of both organic materials and of "chemical" fertilizers. I use quotes around the word chemical to indicate the restricted sense in which it is used here; actually, all fertilizers, be they of organic or inorganic origin, are chemicals in the forms in which they are absorbed by plants.

All kinds of easily rottable vegetable waste are good makings for the compost heap

To be effective, organic matter must be added to nearly all soils in considerable amounts and, because it decays (in doing so it provides nutrients for soil microorganisms and for plants), it must be replenished from time to time. This is especially true of plots on which short-term crops such as annuals, vegetables, and most perennials are grown. This all adds up to the fact that the gardener needs considerable amounts of organic matter to spade into his outdoor soil, to mulch its surface and to mix with soils for plants grown indoors. The problem of obtaining sufficient amounts is not always easily solved economically. Some of the most practical sources of bulk organic materials suitable for use in soil improvement practices are here listed.

Compost may be prepared at home with very little trouble. Collect all nonwoody plant debris (except any known to be infected with soil-borne diseases or pests, such as crown rot and nematodes), and form it into a pile four to six feet high. If the material is dry at the time it is piled, moisten but do not saturate it. Spread the "makings" evenly in layers and tread them firmly after each six to eight inches is spread. There is no need to put soil on the compost pile; in fact, I prefer not to do this. Nor is it necessary to use any activators to promote decay; in due time the heap will decompose without these. However, the addition of an ac-

Make your compost heap in a sheltered, well-drained place shaded from strong sun

Cow manure, well-rotted or half-rotted, provides both organic matter and nutrients

Sedge peat or humus, available commercially, is excellent for garden purposes

Peat moss is particularly valuable for acid-soil plants and for use on sandy soils

tivator (a little half-rotted manure or old compost spread among the layers of the new compost heap as it is made may be used, or one of the commercially available activators) and of some fertilizer will hasten the rate of decay and provide usable compost sooner.

The activator acts by starting decomposition much as yeast causes fermentation. The fertilizer provides nutrients for the bacteria which cause decay. A regular 5-10-5 fertilizer is quite satisfactory—sprinkle it at the rate of about a quarter of a pound to each ten square feet of surface, on top of each six or eight-inch layer that is added to the pile.

Any fairly readily available nitrogenous fertilizer, such as dried blood, sulphate of ammonia or urea, together with some superphosphate may be substituted for the 5-10-5. Two ounces of superphosphate and one ounce of dried blood, ammonia or urea to each ten square feet of surface of each six to eight-inch layer will be about right. There is no need to be precise about these measurements.

Some gardeners sprinkle lime in their compost piles, but this may result in loss of nitrogen and is not usually advisable.

Compost may be made in a pit in the ground (the least satisfactory way) or in a pile above ground. The pile may be contained within walls of masonry, wood, or of chicken wire stretched between stakes or be without any such support. With a little skill a neat pile can be made without supporting walls. The trick is to build the sides and corners of the heap of the coarser material, well packed, and, as the heap is built up, to keep these always a little higher than the interior.

If the heap is contained within walls, these should have holes or slits in them to permit the free entry of air. I prefer chicken wire to boards or masonry as a containment for a compost pile.

The compost pile will usually be made in an out-of-the-way corner; it should be sheltered from strong winds and, if possible, in a shady place. Avoid low-lying spots where water is likely to gather and remain.

Let the sides of the heap slope slightly inwards from the bottom to the top and keep the top slightly hollowed so that it will absorb rain.

The time taken to make usable compost will vary with the material of which the heap is formed, the temperature and other factors. Many beginners put altogether too much emphasis on the importance of making compost quickly. Unless space is very restricted, there is little advantage in rapid decay. In managing a garden a new pile should be made every year and every year the gardener is entitled to use up one heap. Whether there are one or two or three heaps in varying stages of decay at one time in the compost corner makes little difference.

In any case, when the heap has decayed to about half the extent you wish before you use the compost, it is a good plan to turn it. Pull the old heap down with a fork and reform it into a new pile, taking care to place the inside of the old heap at the outside of the new one and the outside of the old heap inside the new one. Tread each layer in the same way as when the original pile was formed. There is usually no advantage in adding an activator or fertilizer at this stage.

Compost may be used in a fairly coarse state for digging into the outdoor garden and for mulching; there is no need to wait until it has become a fine, powdery material. For mixing with soils to be used for potting and seed sowing, it should have rotted to the extent that it will pass fairly easily through a sieve having a three quarter inch mesh.

Leafmold is simply compost made from the leaves of deciduous trees and shrubs with the admixture of other plant remains. It is invaluable for mixing with potting and seed sowing soils and, if there is a surplus after these needs are met, for mulching and for mixing with the outdoor soil. Oak leaves and beech leaves make the very finest leafmold, but leaves of all trees and shrubs other than evergreens may be used. Have no fear that oak leafmold is unduly acid, it is not; it may be freely used for all plants.

The making of a leafmold pile is essentially the same as that of a compost pile. Make sure that the leaves are moist when stacked (if they are dry, wet them at stacking time). Tread them down firmly. It is not necessary nor even desirable to add activators or fertilizers to leaves. Leafmold for mixing with seed sowing and potting soils should be so decomposed that it can be rubbed through a half-inch mesh sieve with the hand, but not so rotted that it

is impossible to recognize the structure (veins, etc.) of the the leaves. Good leafmold is flakey and slightly fibrous, not amorphous and mushy.

If you haven't a pile in condition to use, you may be able to find some very acceptable leafmold in low places in deciduous woods, probably not enough for a major reconditioning job of your garden, but sufficient to prepare a little soil for seed sowing or potting.

Manure, particularly cow and horse manure, together with the straw or similar bedding material that usually comes with it, is the most valuable of all bulk organic materials with which the gardener deals. It is difficult to obtain in adequate amounts.

Good manure deserves care. Stack it in compact piles *under cover*. A shed, tarpaulin, or other protection from rain reduces loss of valuable fertilizer elements. As the pile is made sprinkle gypsum, at the rate of about a quarter of a pound to each ten square feet of surface on each six to eight-inch layer. This helps prevent loss of nitrogen. If the heap is to be left for long, case it with a two or three-inch layer of soil packed firmly.

Many amateurs allow manure to rot too far before using it. True, for a few plants *very* decayed manure is best and, true, *very* fresh manure can harm delicate roots. Nevertheless, there is seldom any advantage in waiting for manure to become just black humus, with very little of its fertilizing elements left, before using it.

Cultural directions often call for the use of half-rotted manure and they mean just that; in most cases where well-rotted manure is recommended, better results are had by substituting that which is half rotted. Fresh manure, dried and then broken into pieces varying in size from peanuts to walnuts, is an excellent material for adding to potting soil mixtures. In many cases from one tenth to one eight part by bulk of the mixture, may with advantage, consist of this.

Peat moss (sphagnum peat) is one of the most readily available sources of bulk organic matter. It may be purchased from any garden supply store. There is no doubt that it is excellent for mixing with the soil for plants that prefer acid, peaty soils, such as rhododendrons, mountain-laurels, and heathers, and for mulching these, too. It is equally true that it can be used advantageously in these same ways for most other plants, especially if the soil is sandy and well drained, yet when it can be had, I prefer good leafmold to peat moss except for plants known to need acid soils. Especially do I prefer it, if the basic soil is heavy and clayey.

Sedge and reed peat or humus is generally available from dealers in garden supplies. It is obtainable both in a raw state and as "cultivated" peats. The latter are prepared by growing green manure crops on them, discing them under, and allowing them to decay.

These peats are usually dark brown or black and less acid than peat moss. For gardening purposes they are about midway between peat moss and leafmold. Good-quality humus or sedge or reed peat is light in weight and fluffy when dry. Beware of rascally itinerant traders who truck around black mucks and dried muds (as well as coffee grounds waste and other industrial wastes) and sell them to gullible home owners as "best-quality humus." When buying humus materials, *always* deal with an established concern.

These peats are excellent for mixing with seed and potting soils and, mixed with soil, for topdressing lawns. For this latter purpose I prefer them to peat moss.

I have had better consistent results from their use on heavy clay soils than from peat moss. They rot (and thus disappear from the soil) faster than peat moss but, of course, in doing so they release nutrients to the plants.

Green manure, provided by sowing and turning under of cover crops, is an inexpensive and effective method of adding organic matter to the soil. The cover crop most generally useful to gardeners is winter rye. It may be sown broadcast on every bare patch of ground in late summer and fall and spaded or plowed under when it is about eight inches high the following late winter or spring.

For sowing in spring and summer buckwheat is excellent as a green manure, or Italian or domestic rye grass may be used. The rye grasses are especially worth considering when the object is to improve an area near the house that is to be made into a lawn, because they can be kept mowed to pro-

(Continued on page 184)

Green manures such as winter rye, buckwheat and soy beans are grown from seeds

The seeds are raked lightly into soil that has been loosened shallowly beforehand

When the green manure crop approximates eight inches in height it is spaded under

Grasses and Cereals

Though cereal grasses of today differ from those of old, grain is still the basic food.

By **Anna H. Koffler**

IN COMMON LANGUAGE the term grass includes many varieties of clover, other members of the Legume Family, and such "herbs of the field" as chickory or plantain. But we mean here strictly the members of the Grass Family. Their variety is great, for there are more than one hundred species of them in natural pastures. More specifically we are here concerned with the cereal grasses. The following six are now classified as true or major cereals: wheat, barley, oats, rice, rye, and corn. In former times millet was much used, but it is now classified as a minor cereal.

The Romans held festivals at seed time and brought offerings of wheat and barley to their goddess Ceres, who was worshiped as the giver of grain. These gifts were called *cerealia munera,* and our word "cereals" can be traced back to this expression; these rituals themselves go back to the festival of Demeter, the goddess of bread in Greece. When Christ came, He superceded all and was accepted as the God of Bread, as H. E. Jacobs relates in *Six Thousand Years of Bread.* The beginnings of agriculture are very old. Man first appeared on earth in long by-gone times, when North and South America and Australia were connected by land with Europe, Asia, and Africa. The saga of the Atlantis has never died out.

There is a clear cleavage that runs through the whole race of man. There are those sedentary in habit, distinctly social in their inclinations, wanting to settle down and till the soil; and there are those nomadic in habits, always wandering, living by hunting and heading and always at warfare with the sedentary people. The old story of Cain and Abel. The center of distribution of intellectual life within historic times was a belt bordering the Mediterranean and extending eastward through Asia Minor, Persia, India, and China. This belt is characterized in general by low rainfall and relatively high temperature, making it necessary to conserve water or irrigate, and it required engineering skill and much labor to install and maintain the equipment. Desert lands which could not be irrigated were inhabited by Nomads, who despised the people who cultivated lands.

Asia Minor at one time boasted of two hundred and thirty cities, each having its own special coinage. It was a land of culture, wealth, and prosperity. Recent explorations show the ruins of magnificent buildings. The agriculture was maintained to the end of the Roman Empire, when it was first destroyed by the Arabs and later by the Crusaders and Turks. But the soil, so Dr. M. Whitney tells us in *Soil and Civilization,* is still good.

Herodotus says that Mesopotamia was a land of "unbelievable fertility" and that it was the greatest land for the production of grain. At the time of the early Caliphates, there were supposed to have been twelve and a half million acres under cultivation. The soil is still good. The celebrated Hanging Gardens are one of the seven wonders of the ancient world. There was an engine to pump water to the uppermost terraces of the gardens; great reservoirs were built to control the flood waters. The ancients found the key to proper agriculture: water. And their agriculture was devoted to grasses. Cereals for the humans, pasture for the cattle.

Pliny attributes the following wisecrack to Cato, who was once asked what was the certain source of profit. "Good pasture land," he replied. Upon this answer, inquiry was made as to the next best source of profit. "Pretty good pasture land," was his reply.

The picture given for Asia Minor and Mesopotamia is also true of Syria. There is evidence of great irrigation works. And the story is always the same: the Nomads destroy the work of the sedentary people. Whitney tells us that the soil is still good in Syria, too, and he concludes by saying that only one crop is worth irrigating there, namely, grass.

Grasses are mentioned several times in the Old and New Testament, although we do not know which specific grasses are meant. For example, in Genesis 1:11 we read: "And God said, Let the earth bring forth grass, the herb yielding seed, and the fruit tree yielding fruit after his kind, whose seed is in itself upon the earth." Or in Deuternomy 32:2: "My doctrine shall drop as the rain, my speech shall distil as the dew, as the small rain upon the tender herb and as the showers upon the grass."

Long before the invention of the plow "Father Millet" was the food of man and his gods. The Mongols and Khirgiz of Central Asia still make much use of it. But barley won out, being the grain of soldiers and strong men, and many references to barley can be found in the Old and New Testament. Barley, however, was not suited for leavened bread, and with the introduction of leavened bread in Egypt wheat replaced it. Barley had been the grain used for bread, when man roasted flat breads.

The use of oats, rye, and corn is of much later origin. Oats still is used as livestock feed. The Greeks, who roasted barley and sprinkled it on beef, despised the Scythians, who ate oats, and the Romans shared the same contempt for the oats-eating Germanic tribes. This contempt continued through the Middle Ages, and Samuel Johnson defined in his famous dictionary "oats as food for men in Scotland, for horses in England." To which the Scots replied: "England is noted for the excellence of her horses, Scotland for the excellence of her men."

We hear that some time during the late classic period (300 B.C. to 300 A.D.) grain ships were loaded in Pontos, at the shore of the Black Sea, to take wheat to the south of Russia. A few "weed" seeds which no one noticed slipped into the cargo. These seeds were rye grains; while the soil and the weather proved too harsh for the wheat, the rye survived. The farmers intelligently exploited the accident, and within a few hundred years rye became known in many countries.

(Continued on page 197)

From June to August the harvest is on. A "Malgache" mother gathers the vanilla beans

The Orchid That Flavors

By Bernard P. Champon

The vanilla orchid after pollination. Beans are beginning to form on wilting blossoms

IN A TRIANGULAR-SHAPED area of seacoast and jungles on the northeastern coast of Madagascar, there lies one of the world's greatest orchid producing districts. They are orchids, however, whose flowers never see a corsage, never get inside a florist shop! These are the orchids that are grown for fruit — the fruit (or bean) that gives us vanilla, our most popular flavoring.

Last year, Americans licked up eight hundred and ten million gallons of ice cream and about fifty percent of it, as usual, was vanilla-flavored. To meet this and many other demands for this sweet flavoring in the United States and other parts of the world, Madagascar annually produces about one million, one hundred thousand pounds, or one hundred and seventy-six million vanilla beans. It is now by far the largest vanilla growing country on the globe, normally supplying at least four fifths of total U. S. needs each year.

About ninety-five percent of all Madagascar vanilla comes from the district bounded by the towns of Vohemar, on the north, Antalaha, on the south, and Andapa, on the west. It stretches roughly one hundred and ten miles along the northeastern coast and about fifty miles inland.

Antalaha is the leading town in terms of the vanilla business, making it easily the vanilla capital of the world. A typical, small, French colonial settlement, this vanilla center is literally sandwiched in between the waters of the Indian Ocean and a jungle that starts where its main street leaves off. Without benefit of docks or other seaport facilities, it is still the major export point for vanilla—and more beans are cured there than any place in the world.

A short jeep ride over bumpy jungle roads outside of Antalaha puts the visitor into the vanilla growing country. The orchids are grown by both large and small planters. Some of the huge French-owned installations would easily fulfill the wildest expectations of an American moviegoer. One of these planters currently has thirty-five thousand vines under cultivation, and his plantation area encompasses an entire small town. Yet, interestingly enough, about eighty percent of the vanilla is grown by small "Malgache" (the term for the natives) farmers. Few of these have more than fifty vines, but there are hundreds of them in the Antalaha district alone.

As this article appears, the vanilla vines in Madagascar are flowering. Fall is a busy season for those who grow vanilla, because each bloom on the vines must be pollinated by hand or it will not bear fruit. Each day the "fleuristes," usually women helped by children, must catch the new blossoms within a few hours after they open in the morning, or they will quickly wither and die. Using small bamboo picks, the women pierce the membrane inside the flower that separates the pistil and stamen and transfer the pollen, necessary for fertilization.

Vanilla is not indigenous to Madagascar, and it was not until this method of artificial pollination was developed in the nineteenth century that the vines could be brought to fruition there. In its native Mexico, a tiny bee, called the melipone, can pollinate the flowers, but the melipone does not thrive anywhere outside of the Mexican vanilla district.

The flowering may last into January. The blooms, even on the same vines, do not all come out at the same time. As a result, a "fleuriste" must revisit each vine in her work sector each day during the months of blossoming.

April sees the start of one of the strangest agricultural procedures found anywhere in the world. Unbelievable as it sounds to the stranger, each of the millions of beans grown in Madagascar is laboriously branded while it is still on the vine. Just as the cattlemen of the old "Wild West" fought rustling by branding their herds, the Madagascar vanilla planter protects his beans from theft by putting his mark on them. His "branding iron" is a simple piece of cork into which is stuck some pins, the placement of the pins making the shape of the brand. This gadget is poked into each bean, breaking the skin. The scar that is left when the pin pricks heal makes the sign of ownership.

Madagascar has had its share of green bean "rustlers"—desperados that steal their neighbor's beans just before they are mature enough to be picked. This was the reason for the branding procedure. It was also behind a law now in effect which makes it a punishable offense to be caught with immature beans in your possession. Offenders have been fined as much as a million francs and have had their places of business closed as well. The immature beans, as

Natives bringing harvested vanilla beans to market

might be imagined, never produce as good quality of vanilla.

From June through August the harvest is on. During this period, as soon as the first beans are picked, curing also begins. As the vanilla beans come from the vine, they have no flavor or aroma —this is developed by long and careful curing.

Some of the larger French planters cure their own beans and even buy green beans from other farmers to cure. The "Malgache" however, almost never cures. It is a process that is just too much bother for him. He sells his green fruit either to a French planter-curer or to one of the Chinese in the district who cures but never grows vanilla.

The curing starts with "ebouillantage" as the French call it. The newly picked beans, loaded in large wicker baskets, are dipped into vats of hot water. According to a local saying, "The death of the fruit is the origin of the good perfume." Technically, the hot water stops enzyme action in the fruit. Some curers still jealously guard the "secrets" of their methods, but most follow pretty much the same process.

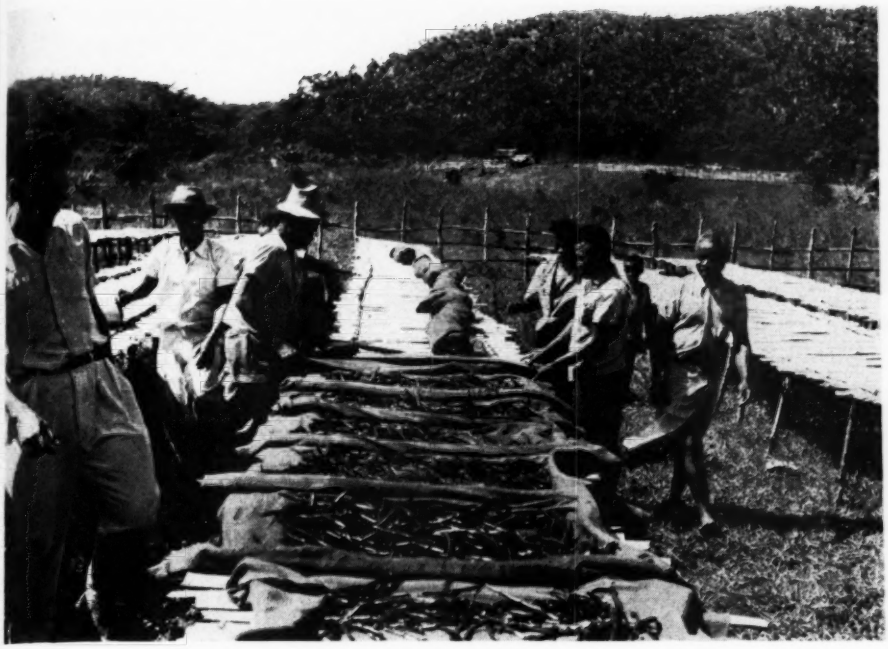
Following the water treatment, workers load the beans into large wooden boxes, lined with woolen blankets, for the night. This "sweats" them, and next morning the green hue of the fruit has turned to brown. At dawn the beans are spread out on long tables or racks to dry in the steaming African sun. In mid-afternoon, each bean is again gathered up, wrapped in woolen blankets, and placed inside to "sweat." This sun and sweat process is repeated for five to ten days, depending on the size and thickness of the beans. At the end of this period, if judged ready, the beans are laid out on the curing trays, large wooden affairs that are stacked inside dark, tin-roofed sheds. There the beans stay for as long as six months. Each tray is checked at least every other day to make sure the curing is going right.

When harvested, the beans are shaped like slim bananas. During curing they not only change color, but also shrivel to approximately the size of a pencil. The curing draws out the excess of moisture as the flavor develops within. But, even though shriveled, the properly cured bean must still be moist and firm fleshed if it is to be considered high quality.

The selection of quality in the beans begins as soon as they are picked. As the "classeurs"—the experts who classify the beans—explain, each bean is inherently a "prime," "second," "third" or "fourth" grade specimen as it hangs on the vine, and the curing can only develop and bring out what is already in the bean. However, they are quick to point out that improper curing can ruin any fruit, and so their job is one of vigilance from the time the beans leave the vines until the final classifying just before packing.

One of the picturesque sights in Antalaha is that of the "mesureurs" at work. Just before the final classification, the beans are measured so that they may be made into bundles of uniform length, a tradition in the vanilla business. The job of measuring is usually handled by a "Malgache" mother and young daughter team. The mother sits cross-legged on a pillow on the ground or atop a crate, with a large, many-slotted box propped up in front of her. Using a gauge, she quickly, but carefully measures each bean, then

Dipping vanilla beans in hot water—part of the curing process



Drying vanilla beans

tosses it into the corresponding slot in the box. Then, as a slot, or compartment, gets full, the daughter empties it and takes the beans to the "classeur" for his final judging. The youngsters stick to the job amazingly well, the teamwork is good and fun to watch.

Bundling is another fascinating process. The beans are bound into tight little bundles of from seventy to eighty beans. This, incidentally, is the way they arrive in the U. S. Long experience teaches the skillful "empaqueteur," the proper "feel" of how many beans will make a standard bundle. He merely scoops a handful from the table without having to count them. With the speed of a card dealer, he picks out the nicest looking ones and sets them aside for the "chemise" or outside layer. Often he will wear a rubber-covered wire collar around his neck to which one end of his linen bundling thread is anchored. With the other end of the thread, he throws a loop around an end of the bundle of beans and ties a special knot. Starting at arm's length, he rolls the bundle toward his chin. With the thread anchored on the collar, the rolling motion tightens the bundle until the thread is almost cutting into the beans. Similar bindings are made at the center and the other end. A good bundler completes his work in about thirty seconds. The beans are then ready for packing, except that just before shipment the two end threads are cut so that the fruit may "breathe" during the journey overseas.

Vanilla starts its long journey to the United States in a primitive way at Antalaha. The bundles of beans, tightly packed in wax paper-lined tin boxes, six to a wooden case, are carried out to waiting freighters in small, man-propelled lighters. The ships come in to within a mile and a half of shore, but are unable to come closer as there is no harbor. The overgrown row boats, in which the natives ferry out the vanilla, are uncovered and the boxes of beans are occasionally hit by sea spray.

Back on shore, the exporters congregate underneath a huge shade tree which stands by the edge of the water. There they sit and oversee the loading work. The ships will usually take forty to fifty tons of beans at a time, representing shipments from several exporters. A small electric crane has recently been put into operation to load the lighters, but the rest of the operation is still primitive and, at times, hazardous. During rough weather the small boats have been overturned with a resulting loss of precious beans and even human life. Not long ago one of the natives was killed in one of these accidents. Next day, while the freighter stood offshore, not one native would work on loading the vanilla.

It is said that every Frenchman (except government employees) in Antalaha owes at least part of his existence directly or indirectly to vanilla. The major planters have both town houses and quarters on their plantations outside of Antalaha, as most of them are involved in exporting and curing as well as growing. It is a tight-knit social community for these men and their wives and children. Their homes are large and comfortable, but not at all elaborate. Until this year there was no electricity in town, but gasoline-powered generators provided current enough for refrigerators and some light. Even

Bundles of vanilla beans ready for shipment

today with the public electrictiy, old-timers are keeping the gasoline generators in case of breakdown. At night, almost the entire French population gathers at "Le Cercle," the local country club. There the planters and exporters sit on the porch and exchange business gossip, and the women and children get together for games and small talk. Most evenings the place is emptied by ten o'clock, as the planter's life starts well before sun-up.

The shops in town are run largely by Hindus and Chinese. Riding down l'Avenue du Commerce, it isn't hard to spot a Coca Cola sign and even a Singer sewing machine advertisement, but the shopping district is quite small and predominantly African in atmosphere. The leading department store is run by an Indian named Amode Akhonjee and is affectionately called "Amode-Etage," because his was the first building in the town to have a second floor.

Vanilla always arrives in the U. S. in the form of beans. Many gourmets and other people especially interested in cooking, use the beans themselves for flavoring. They either store them in sugar cannisters to make a vanilla sugar, or they cut them into pieces and steep them in warm milk to extract the flavor. However, by far the most popular method of using vanilla lies in the commercially made extract. Manufacturers extract the flavor and suspend it in an alcohol solution. Because of the popularity of vanilla, inexpensive imitations have been developed over the years, but none has been able to approach the flavor of the true extracts of the vanilla bean. The natural extract, incidentally, is by law designated "Pure Vanilla Extract" and this is the only vanilla product that can be so labelled.

The vanilla picture has changed a great deal since the Spanish conquistador, Cortez, first tasted the flavor of this orchid fruit at the court of Montezuma. Taking some beans back to Spain along with other treasures from the New World, he introduced Europe to a new flavor. The Aztecs, however, always combined vanilla with chocolate in a beverage called "chocolatyl," and Europeans for a long time continued to use vanilla only in concert with chocolate. Finally, Hugh Morgan, apothecary to Queen Elizabeth I, suggested that vanilla was an exquisite flavor in its own right, and the "orchid of flavors" was launched on a separate career.

Americans lead the world as vanilla users due, to a large part, to our fondness for ice cream. Surprisingly enough, it also comes to us in Coca Cola, is an ingredient in perfumes, and is still used as a flavoring in medicines. At home, baking is still by far the major usage, but food editors have recently been suggesting the use of vanilla with fruits, a practice long favored by the French. Vanilla has a delightful way of blending and improving the natural sweet flavors of the fruit. It was also found recently that the pure extract can brighten the life of reducers. By using vanilla in a fresh fruit compote, it has been proven possible to use much less sugar. The fruit tastes sweet as usual, but the caloric count is almost cut in half.

The jungles of Antalaha in Madagascar are a long way from home, but their orchid vines play a mighty important part in America's pantries.

SOURCES OF HUMUS **(from page 179)**

vide a temporary lawn both attractive and usable. If this is done, only one green manure crop is turned under during the summer; whereas if buckwheat, soy beans, or other quick-growing, warm-weather crop is used two or more crops may be buried in that time. Furthermore, there is not as much top growth added to the soil when a crop of mowed rye grass is turned under as when an unmowed crop eight inches high is buried.

Farmers usually favor leguminous plants as green manures, because they enrich the soil somewhat with nitrogen they accumulate from the atmosphere. This is of less importance to the gardener. Nitrogen is easily added to the soil in the form of fertilizer, and the added convenience of using winter rye and buckwheat often outbalances the nitrogen-gathering value of the legumes. The soy bean is a legume.

No elaborate soil preparation is needed to sow a green manure crop. Usually all that is necessary is to spread some regular garden fertilizer, roughen the surface with a rake or harrow, sow the seed, and rake it in.

When the green manure crop is turned under, not only the tops but the extensive root systems rot and are converted into humus. It is important to bury green manure crops at least three or four weeks before garden plants are sown or planted on the ground. This gives opportunity for them to partly rot before the garden plants make demands on the soil for nutrients.

A program of green manuring and of incorporating other bulk organic matter with the soil surrounding most new homes, carried out for a full season before sowing permanent lawns and setting out permanent plantings, would surely result in thriftier home landscapes in many American communities.

MINIATURE ROSES **(from page 175)**

FAIRY PRINCESS. Type: "Climbing H.C.M." Pat. Rights Res. This is one of the new class of miniature roses, descended from hybrid chinensis minimas and with most of their characteristics, and, in addition, a tendency to climb. It grows to about nine inches with many branches and tough shiny dark leaves. The large pointed bud is a clear salmon, and the one and three-quarter inch flower is white or flushed pink, with scalloped edges to the seventy-five or eighty petals. The faded flowers are apt to linger. Produced by Sequoia Nurseries in 1955, its parents are 'Eblouissant' and 'Zee.'

FANFAN Dwarf. I know this rose only from reading about it. The flower is said to be coppery orange, growing in clusters and having a slight fragrance. The leaves small, abundant, and disease-resistant. Its parents are 'Ebernite' (not in *Modern Roses* IV) and an unknown seedling, and was introduced by J. Gaujard in 1956.

FROSTY H.C.M. Pat. 1412. This is, to my mind, the most beautiful miniature white. In my garden it is absolutely snow-white, though the American Rose Annual 1956 "Proof of the Pudding," p. 250, calls it "small pale pink." It is about a foot high and spreading, with the flowers in clusters. The one and one-quarter-inch flower opens wide to show a small green boss, but no stamens. It has about seventy-five petals and a "sweet honeysuckle fragrance." The pure white bud is oval. 'Frosty' was bred by Sequoia Nurseries in 1953; its parents are (*R. Wichuraiana* x unnamed seedling) X self.

(To be Continued)

A QUEST FOR FERNS

By Howard W. Swift

A VACATION just for complete relaxation often becomes a restless interlude, and it is usually better for one to have a definite objective or project.

Some people set out with fishing tackle hoping for fish . . . that long; others with cameras to capture a bit of magnificence; a few laden down with camping equipment — hardly allowing an opportunity to forget the mundane tasks of daily living.

How many think of throwing a manual on plants into their suitcases together with pants of toreador, Bermuda or dungaree type? Learning a few plants can perhaps be more fun than you think, and there are several ideal guide - books such as *Mushrooms of Eastern Canada and the United States* by René Pomerleau, *Illustrated Guide to Trees and Shrubs* by Arthur H. Graves, F. Schuyler Mathews' *Field Book of American Wild Flowers* revised and enlarged by Norman Taylor, or *A Field Guide to the Ferns* by Boughton Cobb. These are all good and not too difficult to use. If you know French, you might even enjoy taking along *Les Nomes de Fleurs* by Gaston Bonnier — actually a guide to wild flowers in France but containing many plants familiar to our fields and woods.

One bright sunny day during my August vacation I set out on a quest for ferns along an old country road I had known from childhood—a road which is now closed to traffic and much overgrown with alders, maples, birches, beeches and a considerable variety of low native shrubs. The double tracks of wheeled vehicles were all but obliterated with tall grass, and trees bent across the way made frequent stooping necessary. Birds, startled by my intrusion, expressed their annoyance and flew away into the brush. The sound of buzzing mosquitoes warned of coming attacks.

I wonder if many who have spent time in woodland far from human habitation have not felt a strange self-consciousness at first when going back to haunts far from men and the noises of their daily living. It takes a little

Royal Fern

time to sense a true harmony with these natural props and to act a part alone against this unobtrusive backdrop. But soon there were ferns and more ferns.

My equipment on this little expedition were Boughton Cobb's *Field Guide to the Ferns,* a hand lens and a large sketch pad in which to place specimens. Often identification, holding a book, squinting through a hand lens and swatting insects can become just too complicated, and identifications can just as well be accomplished at home with pressed specimens spread out on a large table.

But what a paradise this old road was for ferns! Shallow soil around an outcropping of shaly ledges provided a happy home for the first I found — the light green, quickly perishable New York fern *(Thelypteris noveboracensis).* This one our guide-book makes easy to identify by illustrating it silhouette, accenting leaflets which diminish to almost nothing toward the base of the stalk. Checking further to confirm the need for Mr. Cobb's italicizing the fact that the veins running through the leaflets are rarely forked, the hand-lens came into play, and after examining a leaflet closely, the literary phrase "and it was so" passed through my mind. Fruitdots are very important for identification of ferns, but some fronds have no fruitdots — are sterile. These fronds are no help at all, but a little looking around in a group of ferns during late summer is soon rewarding, as fertile fronds are usually plentiful. Yes, here were fruitdots and they were small and near the margin. Was the covering (indusium) of the fruitdots kidney-shaped? It would take a good imagination to agree if only the coverings which had burst apart to free the spores were examined, but out there on the leaflets near the apex were some not torn apart that were definitely kidney-shaped. After my examination and the observation that I surely would know a New York fern when I next saw one, I left this open space, looking back briefly to enjoy the effect of afternoon sun shining through the thin texture of its tender fronds. Frosty nights would all too soon turn them from green to bright yellowish brown.

Moving on to a steep sloping bank I discovered a large community of triangular-shaped ferns. Mr. Cobb makes the silhouettes of ferns with triangular characteristic impressive by illustrating several on a page. These particular ferns had long, thin stalks and fronds curved backward gracefully to better expose their upper leaf-surfaces to the light. If the lower leaflets had not bent downward instead of being parallel to the others, one might almost think that some mischievous marauder had stripped the stalks of all their lower leaflets. This must be one of two beech ferns— but which one? Looking intently I saw that the leaflets were winged close to the stalk or axis. Then I noticed that the lower pair of leaflets lacked this appendage common to the almost opposite pairs of leaflets above. Ah — that's a definite distinction. This must be the long beech fern *(Thelypteris Phegopteris).* Scrutinizing the under side of the fronds through my 10 X Hastings Triplet lens, I noted the fruitdots close to the leaflet indentations. These were unlike many fruitdots of ferns in that they lacked covering of

New York Fern

Long Beech Fern

Mountain Woodfern

Hayscented Fern

Sensitive Fern

any kind. Such discoveries in nature are more interesting than television!

Following along the grass-grown tracks under the trees, enjoying the silence, the quiet rustle of leaves and the scuttling of a chipmunk, a very handsome fern caught my attention. This one grew luxuriantly in dense shade, and even mosquitoes couldn't keep me from attempting to find out what this fancy one might be. At first I tried to fit its appearance to the description of Braun's holly fern *(Polystichum Braunii)*, but somehow it didn't just fit. It was about the right height, the general leaf-shape was not too dissimilar, and there were brown scales on the stalk. But ye gods, I could see no ears on the leaflets close to the stalk, and that groove on the stalk really wasn't much of a groove. The fruitdots were not actually nearer the midvein than the leaf-margin. It's amazing how your imagination can stretch itself to see things not as they really are! Back to silhouettes then, and comparative fruitdots. This really requires a bit of patience. What will the lens disclose? Well, at first glance these fruitdots didn't look kidney-shaped; they looked round—but wait, the fruitcovers were attached at one side. Finally I was convinced that this was the woodfern *(Dryopteris spinulosa)*. Eventually I found it to be the variety *americana*, the mountain woodfern — a beautiful new acquaintance.

The road dipped and became damp. The grasses underfoot were of different nature: there were a couple of sedges enjoying the additional moisture seeping from a hillside spring. There were ferns here too, happy to have their matted fibrous roots in cool, mucky ground—hundreds of coarse, stiff ferns of thick, leathery texture and with long legs. I had seen these in low places in old hayfields, in moist shady glades all my life—but what were they? This wasn't very difficult to determine because at this season of first opening goldenrod and last flowering of giant mullein plants, the fertile fronds little resembled the lush green sterile fronds and were only tall, unbending stalks laden with small, round, bead-like structures on branches of diminishing length toward the top and containing the spore cases. The form of the segments on fertile fronds, examined under a hand lens when they crack open to disperse their spores, might make you think of little orange peels which had been carefully segmented with a knife, then become sun-baked. These were the sensitive fern *(Onoclea sensibilis)*. In many spots along the three-mile road I found areas thick with very vigorous specimens, and the variance of leaf-form and size among them was quite amazing. Some had leaves that measured sixteen inches across.

Lady Fern

Marginal Woodfern

Common Polypody

Cinnamon Fern

Winding its way to a higher level, the road passed what was left of an old lichen-covered wall of native stone. On the slope beyond, tail-switching cows once chewed their cuds contentedly and munched sweet but meager grass often spiced with pennyroyal. Now what grass there was had ripened to hay, and continued a losing fight with persistent deep green alders and choke-cherries which this August were bearing abundant clusters of puckery deep red fruit.

Here by the fallen wall in the dappled shadow of gently moving leaves were two ferns which are perhaps the most elegant wild ferns of New England: the hayscented fern *(Dennstaedtia punctilobula)* and the lady fern *(Athyrium Felix-femina)*. In identification of the hayscented fern there was first the characteristic long-tapering, thrice-cut fronds on brittle stalks colored mahogany near the ground, and bristly non-stalked leaflets. Long before lifting a frond to examine the whitish fruitdots under the lens, I was conscious of its delicious sweet fragrance. Under magnification the fruitdots were decidedly different than the others I had found. Their tiny round spore cases were thickly packed in little brown cup-shaped protecting sheaths on indentations of the leaf-margins. To a hunter with botanical interests, this fern quickly becomes a frequently-met friend in this area, but the farmer may consider it a sneaking pest as it stubbornly encroaches on his hard-cleared land.

The lady fern is another thrice-cut fern with thirty-inch leaves which grow in circular clusters and have pale, smooth stalks. Only a glance at the lower surface of fertile fronds and there could be no confusing this with the hayscented fern. The lady fern has fruitdots which are cinnamon-colored. Looking from leaflet to leaflet along the frond under a lens, the fruitdots sometimes looked round, sometimes oblong: confounding as I tried to make them resemble the athyrium on Mr. Cobb's page of comparative fruitdots. Then I remembered. The more juvenile fruitdots toward the apex of the leaves were curved, matching the line-drawing perfectly, and I knew this must check if my determination were correct. There must be not only one but several characteristics that are in accordance. With these less-familiar non-flowering plants, my first mistakes in comparing descriptions with actual plants, even with a very good guide, were all too obvious.

The road continued upward and turned, skirting a deep depresssion on one side and cutting into a hill rising quite abruptly on the other. Not too long ago this upper area was left in great disarray by lumbermen concerned only with logs for pulpwood. What scars and unsightly disorder man can

(Continued on page 189)

GRASS...FOR THE PRAIRIE

By Edward O. Gangstad

A new sod of 'King Ranch' bluestem, *Andropogon ichaemum* L., originally introduced from Amoy, China, in 1917

AGRICULTURE of the Southern Great Plains is passing through a phase of scientific management. The goal of this program is to restore soil fertility, conserve soil moisture, and improve crop and animal production. While there are many problems still to be solved, the key to the present plan is good grass.

The deleterious effect of grain and row crop cultivation on the soils of the Southern Great Plains is not materially different from other parts of the country, and the principles of conservation and production are similar; but the actual crops and their culture are quite different, and there are many limitations to the general approach to conservation that do not apply to other areas.

Since the plow was first put to the prairie sod, or overgrazing destroyed the natural vegetation of the range, the re-establishment of grass has been a major problem. After a grass sod has been lost, thirty to fifty years are required for natural regrowth to prairie grass. It is possible to reseed these ranges with native species with mechanical means and restore the sod in three to five years. While this represents a considerable improvement over nature, it is nevertheless, a substantial cost to the rancher.

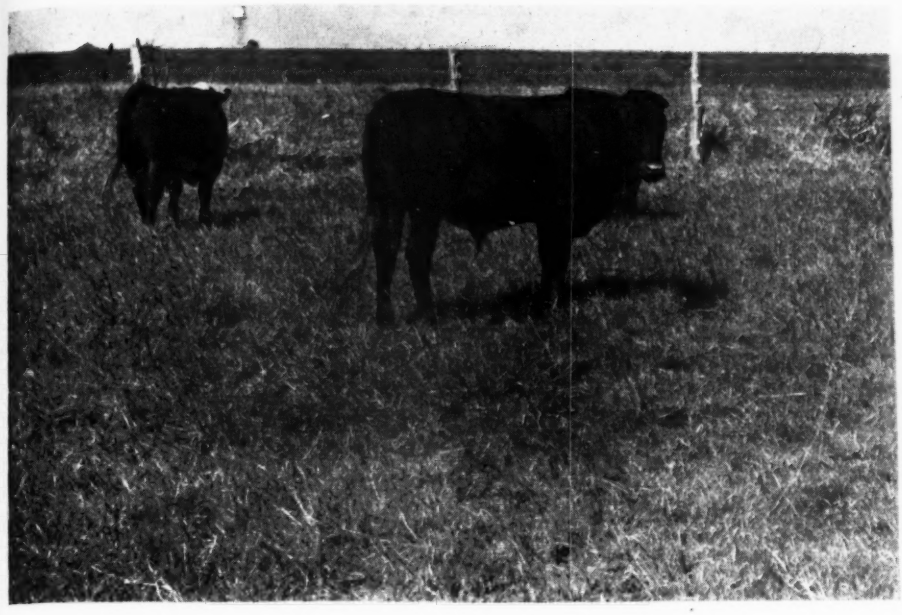
Many attempts to reseed the range have ended in failure. Under average conditions, the soil surface is dry, and grass seed, because they are small, must be planted near the surface. With a light rain, they germinate and die. Two to three weeks of moist cool weather are required for germination and establishment of the seedling. In the Southern Great Plains, periods of cool moist weather are infrequent and unpredictable, and the probability of re-establishing the land to native grass is low. This is a serious limitation to rotation of cultivated and sod crops, and the poorer upland soils should be kept in grass.

Soils that are deeper, more fertile, and less droughty are commonly used for grain and row crops. But to keep this land in good physical condition and maintain soil fertility, crop residues must be returned to the soil. While a grass sod will add organic matter to the soil, reduce the loss of rainfall due to run-off, and stop wind and water erosion, a grass sod will use more soil moisture than a row crop of fallow land during the dry part of the season. In such a situation, there is a practical limit to the number of years the land should be kept in grass, and rapidly established tall-growing grasses are required for good first and second-year yields of forage. Some of the answers to this problem are just now being found, and further studies are in progress.

The native prairie of the Southern Great Plains contains a great variety of species but only a few of them are predominant. Of these, the native bluestems (*Andropogon* spp.) form one of the largest components. Big bluestem (*A. gerardi* Vitman.), little bluestem (*A. scoparius* Michx.), sand bluestem (*A. hallii* Hack.) are the more important species. Broom sedge (*A. virginicus* L.) and split-beard bluestem (*A. ternarius* Michx.) are common weedy species found on the lighter and less fertile soils of the region.

During the past several years, a number of Asiatic or Old World bluestems have been introduced and have gained prominence as cultivated forage species. King Ranch bluestem (*A. is-*

Terrace sod of 'King Ranch' bluestem. Forage yields were increased by applications of nitrogen and phosphate, but rates above one hundred pounds per acre of nitrogen reduced the stand of grass



Cultivated pasture of 'King Ranch' bluestem. During the four years (1951-1954) this pasture gave an annual average yield of two hundred and seventy pounds of beef per acre, one hundred and thirty-seven grazing days per acre, and an average live weight gain of two pounds per steer.

chaemum L.), Caucasian bluestem (*A. caucasicus* Trin.) and silky bluestem (*A. sericeus* R. Br.) have been used in the northern part of the region. Angleton bluestem (*A. nodosus* (Willem.) Nash.), Kleberg bluestem (*A. annulatus* Forsk.) and medio bluestem (*A. caricosum* L.) have been utilized in the southern part of the area.

Cultural and grazing studies at the Texas Research Foundation on the Blacklands of northcentral Texas have demonstrated that King Ranch bluestem is one of the better adapted grasses. Through the past several years of drought, it has persisted where other grasses have been lost. It has responded to applications of nitrogen and phosphate, and under good management may be grown with certain legumes. Relatively good yields of beef have been obtained in grazing trials. Where there has been sufficient moisture, good yields of seed have been harvested.

The first introduction of King Ranch bluestem was received at the California Experiment Station from Amoy, China, in 1917. Introductions of this strain have been received from other parts of Asia, but they are all the same because of an apomictic or asexual form of reproduction. The name, King Ranch bluestem, comes from commercial lots of seed that were increased by Nico Diaz, agronomist at King Ranch, near Kingsville, Texas. He increased this seed from a selection T-3487 distributed from the Soil Conservation Service in 1937.

FERNS (from page 187)

make to feed the requirements of our civilization!

Here among rotting logs and brittle limbs of felled trees I found a particularly virile fern with dark bluish green heavy-textured fronds, deeply grooved and made ragged below the leaflets by very thin, silvery brown, irregular scales. And what fruitdots! They looked like minute buttons. After a quick look I thought these spore case coverings were round with center stems, and proceeded to try making all the plant characteristics fit the description of a fern in the genus with the Christmas fern *(Polystichum)*. When this failed completely, I checked the spore case covering with a lens. Ah, yes—the little coverings which at first had looked like little umbrellas were actually attached on one side. This, then, was a start in the right direction, leading to the conclusion that this must be the marginal woodfern *(Dryopteris marginalis)*—my first evergreen fern so far — and a beauty.

The road wound downward again and the heavy shade of trees was broken by a clearing where farm buildings once stood. Poplar and maple trees grew out of the old cellar marked by a crumbling mortared wall and the view of the valley and hill which I vividly recalled from years back was entirely hidden by rampant shrub and tree seedlings. A lone Canada lily proudly flowered in the long brown grass which was once kept neatly trimmed. By what had once been the driveway there were tall rank ferns of coarse habit, upright, and bearing stiff leaflets which bent upward toward the leaf tip. So obvious was this characteristic that I was misled into thinking it might be a Virginia chain fern as the particular frond I had pulled was sterile, the stalk was long, the leaflet-shape closely resembled this woodwardia. Even the stalk seemed to look as though the face had two lateral lines running to the base. Then suddenly I noticed that some fronds in the group had branches with spore cases just above the middle of the stalks, and that the top of these fertile leaves had leaflets similar to the sterile leaf I had just been examining. Well, then without doubt this must be the interrupted fern *(Osmunda Claytoniana)*. A very good question: how do you tell an interrupted fern when it is not interrupted? Whether they know its name or not, many people must have considerable fondness for this hardy, stalwart fern. It is the one most planted close to house-foundations all through the northeastern states.

The road suddenly became sunny and there were sweet-clovers nearly shoulder-high for a quarter of a mile in a five-foot border on either side — their stingy fragrance almost overpowering in the hot sun. I thought this to be the end of the ferns, but no—through the clovers I soon spied a swampy frog-pond all but filled with ferns. These were also very large, strong ferns—but differing from the interrupted ferns by having leaflets not as closely arranged along the thin stalks and covered with light brown wool. The green fronds revealed no fruitdots on their lower surfaces. This couldn't be an interrupted fern with no interruptions—*that* unusual one had a stalk which was very smooth. What were those twisted stalks with brown, mealy substance near the top and looking as though they had died in some dreadful agony? Ah — fertile fronds that had served their purpose well; spores in thousands had been released from the round spore cases

(Continued on page 198)

What they are doing today –

Our Former Student-Gardeners

"WHERE IS Ralph Pinkus these days?" "In Dallas, Texas. When he returned to the States in 1951, after spending seven years in Guatemala supervising the propagation and cultivation of cinchona for quinine production, he went into the nursery business in Texas. He's doing well, is active in community affairs and in the Men's Garden Club."

"What about David Melrose and Donald Samson?" "Well, the former is head gardener at the Barnes Foundation in Merion, Pennsylvania, and the latter is horticulturist in charge of the nursery for Williamsburg Restoration, Inc. The nursery and small greenhouses are used to supply the gardens at Williamsburg with annuals, perennials, shrubs and small trees. This includes plant material for replacement and for landscaping buildings as they are restored. Donald Samson also runs the cut flower garden to supply flowers for the exhibition buildings. With few exceptions, the plants used are those grown in the eighteenth century."

To you to whom Ralph Pinkus, David Melrose, and Donald Samson are names, just names, let us state, by way of explanation, that they were once student-gardeners at The New York Botanical Garden.

Back in the 1930's when the Editor of The Garden Journal was Editor of the Gardeners' Chronicle and Secretary of the National Association of Gardeners, the association was deeply concerned about the training of young men to follow the profession of gardening. Clarence Lewis, member of the Board of Managers of The New York Botanical Garden, suggested that it would be stimulating if a cooperative plan could be developed between the association and the Garden whereby the latter could furnish some training in the plant sciences. The association immediately formed the Committee on the School for Gardeners of which T. H. Everett, then head gardener of the Manville Estate in Pleasantville, N.Y., and Dorothy E. Hansell were members.

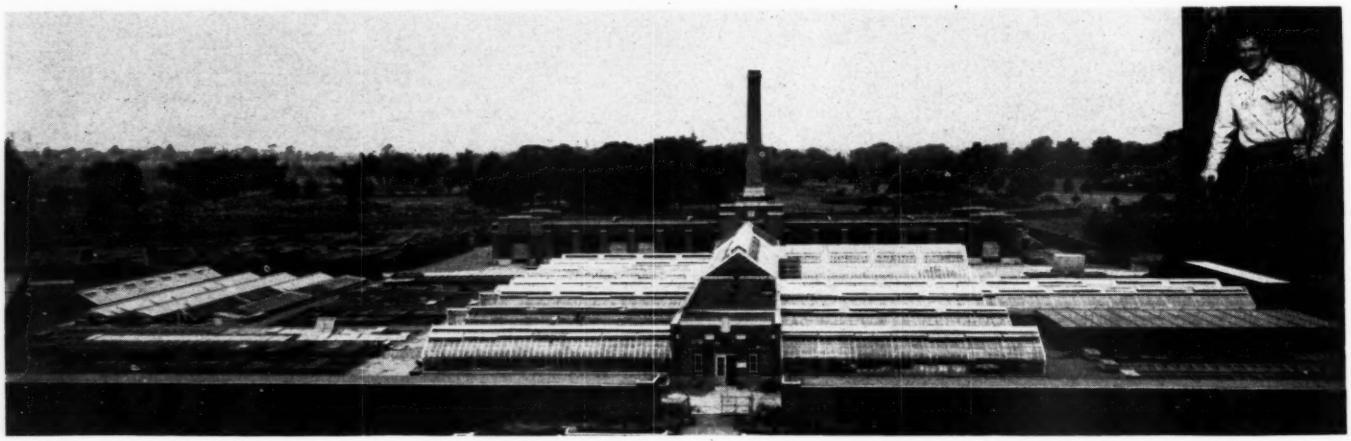
Various plans were weighed and found wanting until Mr. Everett presented a concrete plan (similar to the system at Kew) to the association at its convention in Swampscott, Massachusetts, in the summer of 1932. Mr. Everett, in the interim, had been appointed Horticulturist of The New York Botanical Garden. Out of this plan grew The New York Botanical Garden School for Gardeners, which was carried on successfully for twelve years. It opened October 10, 1932, with the appointment of seven young men as student-gardeners for a two-year period. These and later appointees were given every opportunity to gain experience in horticultural practices during their daily work at the Garden and were provided, through required attendance at evening lectures, with a background of scientific information — general and systematic botany, plant pathology, entomology, genetics, and other subjects.

Was the project worthwhile? Did the student-gardeners gain by the training and instruction? Let us answer these questions by relating what some of them have been doing since they left the Garden.

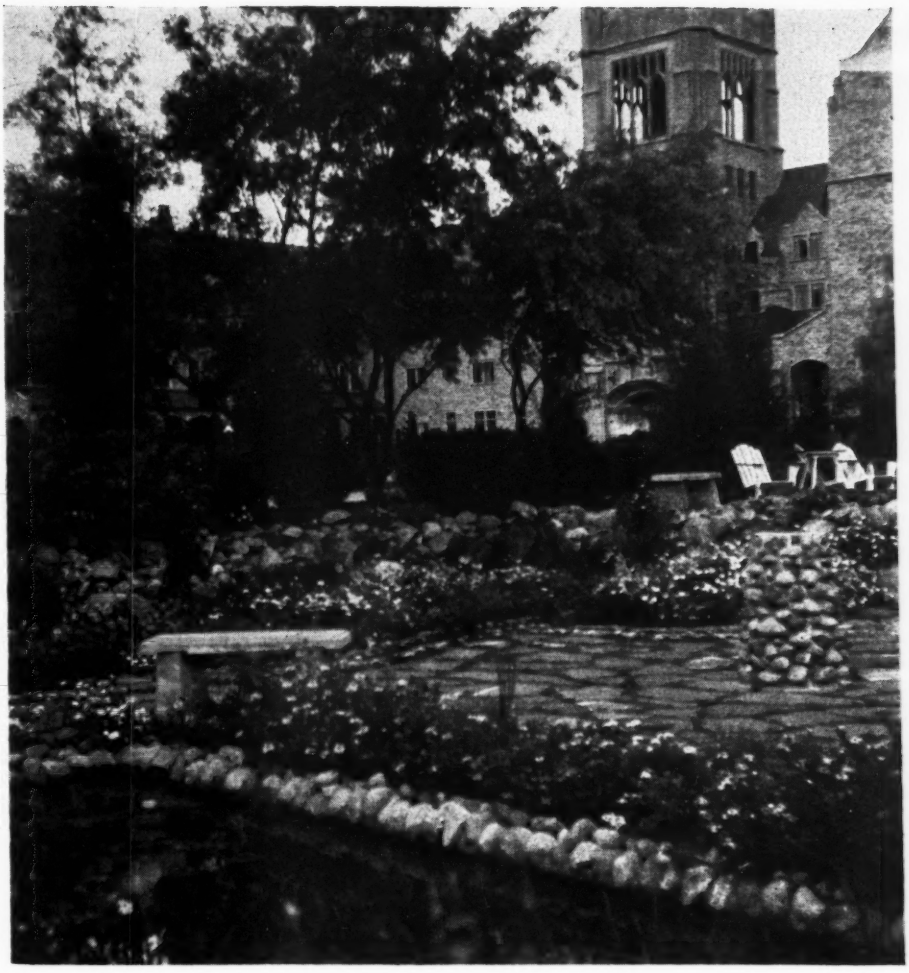
Adelard J. Bisaillon has been foreman of the service and show greenhouses of the Montreal Botanical Garden since July 1939. The service greenhouses, comprising twenty-six sections, cover an area of almost thirty-six thousand square feet and house collections of exotic species and varieties, representing a total of twenty-five thousand plants. Construction of the large conservatory has been started. The first unit of approximately fourteen thousand square feet is to be completed this fall; a second unit will be erected in 1957, and the entire conservatory finished within three or four years.

After spending three and a half years in the U. S. Armed Forces, Joseph T. Bonadies held the position of head gardener at Mt. Vernon, Virginia, from March 1946 to March 1951. Then he pursued his gardening career on estates in Ladue and Overland, Missouri, until July 1954 when he went to St. Mary's College, Notre Dame, Indiana. Located one mile north of South Bend, directly across the Dixie Highway from Notre Dame University, St. Mary's celebrated its one hundredth anniversary in 1955.

Mr. Bonadies is in charge of the campus which consists of thirty-four acres. The college has added a new sci-



Adelard J. Bisaillon and the extensive greenhouses of the Montreal Botanical Garden



Rock garden and pool, St. Mary's College, Notre Dame, Indiana

ence building and now has under construction a two-million dollar fine arts building—both to be landscaped in the near future. As there is a ten-million-dollar expansion program under way, there will be plenty of work to occupy Mr. Bonadies' time and attention.

The gardens are small—though plans include new and larger flower beds—but there are extensive lawns and many trees and shrubs.

Mr. Bonadies writes that he will always be grateful to T. H. Everett, Joseph Tansey, Pat Connelly, the late P. J. McKenna, and others for the excellent training he received when he was a student-gardener at The New York Botanical Garden. Happily married since 1947, he is the father of four boys.

Mr. McKenna, to whom Mr. Bonadies refers, was one of the first group of student-gardeners to be appointed in the fall of 1932. He remained at the Garden as garden foreman and chief assistant to Mr. Everett until 1943. Mr. McKenna was widely known for his horticultural writings and at the time of his death in 1956 was on the staff of Flower Grower.

Another one of the first eight appointed to the School for Gardeners is John Borin, who has remained in the Garden's employ and is today gardener in charge of the orchid collection.

Herbert L. Bragg — known to his his friends as "Pat"—left the Garden to enter the U. S. Army. Since the end of World War II, he has spent most of his time in California, and most of that—with the exception of the two years he worked for the E. James Nursery at Oakland—with the Superior Nursery Company.

The Superior Nursery Company has two establishments; one for growing plants at Buena Park, one for sales and rental service at Los Angeles. About ninety percent of the business is plant rentals; the company designs, installs, and maintains plantings for offices, stores, restaurants, and business shows. As head grower, Mr. Bragg has charge of the range at Buena Park, supervising the growing of the plants used in the decorating end of the business, and of the maintenance of the greenhouses and nursery yard. He is also called on to help design and install some of the "big jobs."

Samuel F. Bridge, Jr., spent eighteen months as assistant superintendent at "Chelmsford," the estate of the late Mrs. Elon Huntington Hooker, Greenwich, Connecticut, after leaving the Garden. Then, soon after the outbreak of World War II, he joined the Army Air Force and served five years—including three years in the Pacific and eleven months in Army hospitals.

Mr. Bridge operates his own nursery, selling both retail and wholesale and specializing in herbs, perennials, rock garden plants, and annuals. He raises one hundred and fifty varieties of annuals in separate colors in plant bands. His rock garden displays in the annual three-day fall flower shows of the Westchester and Fairfield Horticultural Society have won gold and silver medals.

Mr. Bridge has recently been granted a special exception (zoning) to enable him to move his nursery to a larger piece of property that has been in his wife's family for over two hundred years.

Proof that Mr. Bridge appreciates the training he received as a student-gardener at The New York Botanical Garden — he has a student-gardener from the Montreal Botanical Garden at his place each year for a one-year training period. On completing the third year at Montreal, each student is required to spend a year at an approved nursery before he can get his diploma. And Mr. Bridge's establishment in Greenwich is an approved nursery.

Philip A. Chandler, who came to the Garden in July 1938 as exchange student-gardener from Kew, went to the Montreal Botanical Garden in July of the following year to take charge of the outside grounds, then being completed. He had over fifty men under his supervision. On leaving Montreal, he operated his own nursery in British Columbia for several years; then moved to California and subsequently con-

Above. Typical of the plant installations by the Superior Nursery Co., for home and auto shows

Left. *Picea Abies* is being air-layered at Yale Forestry Research Center in Valhalla, N. Y.

nected with the Plant Pathology Department of the University of California at Los Angeles, where he has charge of the experimental greenhouses. A former student-gardener, also living in California, has this to say about Phil Chandler, "A remarkable chap, who found his real berth and, I must add, is doing the best of all of us." This informant is doing remarkably well himself!

Speaking of exchange student-gardeners, Howard Swift, assistant to the Curator of Education and Horticulturist, was the first exchange student-gardener from The New York Botanical Garden to Kew, and C. J. Collins, who is now superintendent of the Parks Department of Colchester, Essex, England was the first to come from Kew to the Garden.

Donald Samson, mentioned at the beginning of this story, was exchange student-gardener from the Garden to the Royal Botanic Garden at Edinburgh in 1939. Joseph Elliott, son of Clarence Elliott of world-wide fame, especially for his rock garden and alpine plants, came from Edinburgh to the Garden in April 1939. But the precarious international situation compelled his return to Scotland in October of that year.

Stephen G. Cutting has been in the New York area since 1946, so the Garden has seen him around—as judge at the Chrysanthemum Show, as guest host on Rose Day, as guide on some of the Spring Garden Tours, as instructor in the Educational Program. He has also been active in the National Association of Gardeners, and in its Westchester Branch, and in the Saw Mill River Branch of the Audubon Society.

Mr. Cutting's first position, on leaving the Garden in 1939, was that of head gardener to Mr. and Mrs. J. Hale Steinman, "Conestoga House," Lancaster, Pennsylvania. The estate was noted for potted plants, used for indoor and outdoor displays during the entire year; its collection of California hybrid fuchsias was outstanding. While a resident of Lancaster, Mr. Cutting participated in the affairs of the Men's Garden Club as educational chairman.

In the spring of 1942, he joined the Air Force, serving with the 60th Troop Carrier Squadron in the States and the 310th Bomber Wing in the Philippines and Japan.

October 1946 found him in Scarborough, New York — and there he remained for the next nine years as head gardener at "Fieldwood Farm," the country home of Mr. and Mrs. John D. Rockefeller III, with its great herbaceous borders. Now Mr. Cutting is Horticulturist at the Yale University Forestry Research Center in Valhalla, New York, in charge of the greenhouses, nursery, and arboretum.

Potted plants, herbaceous borders, basic research problems in forestry — they're all within the scope of a man who has been a student-gardener at The New York Botanical Garden and an exchange student-gardener at Kew.

Upon leaving The New York Botanical Garden, Donald Dodds went to work for "Uncle Sam" in the Department of Economic Welfare, spending one year in Haiti where he supervised jungle clearance and plantation work in guayule. When the successful construction of synthetic rubber plants made the guayule project unnecessary, "Don" was transferred to Mexico for a period of two years. There he was connected with the exploration for and adaption and propagation of drug plants.

Following the war, he spent a brief period with Vaughan's Seed Store in New York City; then in the spring of 1945 he joined Bodger Seeds, Ltd., in its breeding department at Lompoc, California. His work was partly in the production of flower seeds, partly in the breeding of new varieties.

In September 1953, Mr. Dodds moved to the main offices of Bodger Seeds, Ltd., in El Monte, to take up duties in sales and office management. He was elected to the Board of Directors of this company in January 1954 and is a member of the Research Committee.

William Feltges returned to the Garden in 1945 after a four-year tour of duty with the U. S. Army. In 1951 he accepted his present position as superintendent of grounds at Mt. St. Mary's Academy in Newburgh, New York.

Above. Samuel F. Bridge, Jr., on right, with Jacques Lafreniere, student-gardener from the Montreal Botanical Garden

Left. Donald Dodds is surrounded by *Celosia plumosa*, var. 'Pampas Plume'

Bishop Dunn Memorial, Mt. St. Mary-on-the-Hudson, Newburgh, N. Y.

The "Mount," which was once part of the old Von Duzer estate, consists of approximately forty-five acres of land; most of this is lawn with fine specimens of purple, weeping, and cut-leaf beeches, as well as oaks, spruces, and crab-apple. The forsythia hedge is the envy of the town.

Mr. Feltges has three men and the usual assortment of tools, including a Worthington tractor and three "gang" mowers, to maintain the grounds in ship-shape condition and to care for a cutting garden, two small rock gardens, a border along St. Joseph's Walk, and the herb garden (started last year). All the plants for the gardens are raised in a ten-sash hotbed. Time does not hang heavy on his hands — his young sons also keep him busy.

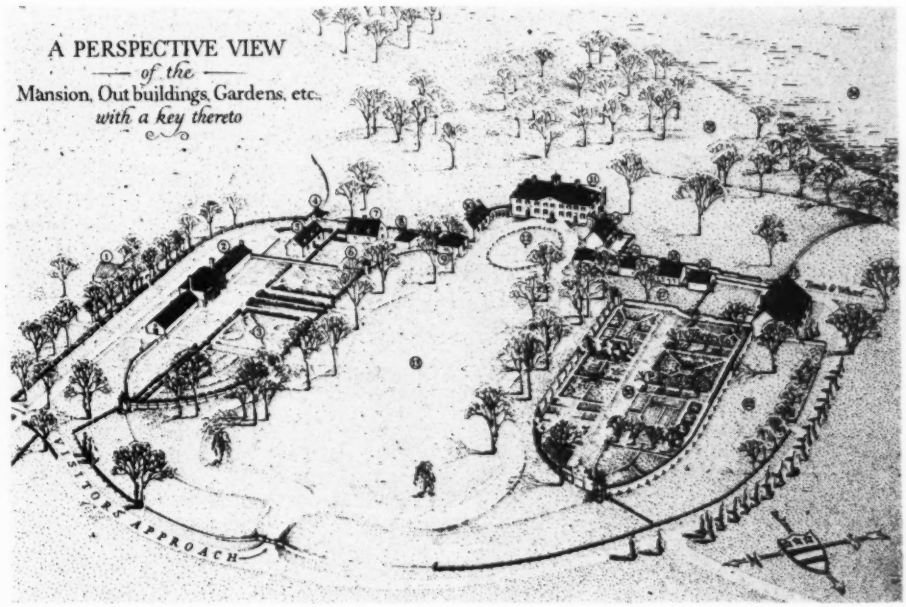
For the past ten years Robert B. Fisher has had the pleasant responsibility of being Horticulturist of the Mount Vernon Ladies' Association of the Union, Mount Vernon, Virginia. Yes, he is putting the knowledge of and experience in horticulture gained at The New York Botanical Garden into practice on the grounds and gardens of an ardent gardener and farmer —George Washington, the first President of the United States. "Bob" spent several years in the service of his country between his student-gardener days at The New York Botanical Garden and the acceptance of his post at Mount Vernon.

"Laurence V. Stapleton, vice-president and account supervisor of Grant Advertising, Inc., has announced the appointment of Truman Fossum as an assistant account executive on the Florists' Telegraph Delivery Association account in the New York Office." This announcement was made on June 10, 1956. Since 1945, Mr. Fossum has been engaged in economic research for florists and nurserymen, the program being initiated while he was assistant professor in the Department of Ornamental Horticulture at Cornell University. In 1949, while Director of Research and Member Services, National Secretary of Allied Florists' Associations, he went on leave to the U. S. Department of Commerce as consultant for the purpose of conducting a census of horticultural specialties. This assignment was completed in 1952, when he joined the U. S. Department of Agriculture as agricultural economist. In 1953, Mr. Fossum received the Foundation for Floriculture Award for outstanding research in horticulture, and in 1954 the Norman Jay Colman Award for outstanding research for ornamental horticulture.

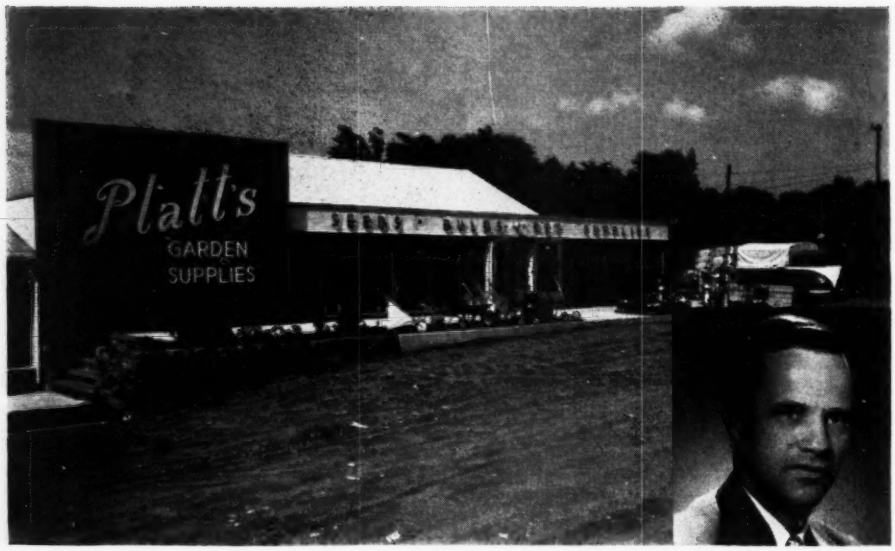
Mr. Fossum spent two years at the Garden as assistant foreman of conservatories, receiving in 1938 certificate of completion of the two-year course in horticulture; he came to the Garden from the Royal Botanic Gardens, Kew, from which he had also received certificate of completion of its course in horticulture. He went to Cornell for his B.S. degree (in floriculture and ornamental horticulture) and to Ohio State for his M.S. degree.

Frank G. Mackaness is, and has been for the past eleven years, agricultural consultant for the Portland (Oregon) General Electric Company. His work relates to agriculture as it impinges on the company and, as agriculture is the basic industry in the area, his points of contact are interesting, numerous, and varied.

He was exchange - student - gardener from Kew to The New York Botanical Garden when Stephen G. Cutting was



Mt. Vernon, Virginia — the home of the first president of the United States



Platt's Garden Supplies is the largest unit in a new suburban home center in Branford, Connecticut; John T. Moss at right

exchange student from the Garden to Kew. Mr. Mackaness went home for six weeks in the summer of 1938, returning August 23 and going directly to New Orleans as Director of Horticulture at Dillard University, a position for which he was indebted to T. H. Everett.

In 1940, Mr. Mackaness married a botanist from Tulane University—and hoped to get back into botanic garden work in which he had already spent eight years. But "finding U. S. horticulture dominated by women" and "the whole flavor of gardening, which had savored of pipe tobacco and damp earth in England, typified by a more feminine outlook (flower arrangements, etc.) in the U. S.," he reluctantly turned his back on botanic garden work and reentered agriculture in which he had been steeped since birth. The war took him to Haiti and a cryptostegia rubber project, which ran its course in two short years.

On the doctor's advice he sought a cooler climate for his family, moved to Oregon in 1944, and went to work for the Portland General Electric Company. This company serves a twenty-three-hundred square mile area at the northern end of the Willamette Valley betwen the Coast Range and the Cascade Mountains.

For seven years, Frank, his wife, and three sons shared their one hundred and twenty acres with the bear and cougar in the mountains overlooking the Columbia Gorge thirty miles east of Portland; but after a bone injury, he moved his family six miles closer to civilization. The Mackaness wilderness home, still intact, offers hospitality to any botanist who likes to camp in more comfort than a tent affords.

In October 1938, on completion of his training as a student-gardener, John T. Moss became Horticulturist of the Yale Bureau of Planting; a year later, he was transferred to Yale's School of Botany where he assisted with greenhouse experiments and classes. His career was interrupted by four years service with the U. S. Army Medical Corps. He came out in May 1946 with the rank of captain, having helped to organize and train the 159th General Hospital at Fort Ord, California, and having operated a hospital in the south of England, the largest single hospital in E.T.O.

Mr. Moss entered the employ, in July 1946, of W. Atlee Burpee Co., as plant breeder and supervisor at its Iowa seed farm, and in December 1947 was appointed manager of the branch with up to three hundred employees during rush seasons. He assisted in purchasing and setting up Burpee's western mail order branch at Riverside, California. Then, in 1950, he moved to the home office in Philadelphia to assist with branch coordination and sales.

Just three years ago, John Moss formed a new company to purchase the seventy-five year old Frank S. Platt Seed Company in New Haven, Conn., of which he is president. And on January of this year, he formed the Platt Realty Company to build and lease a group of stores for a suburban home center. Platt's Garden Store and Nursery is the largest unit in the group, located on Boston Post Road, U. S. 1, in Branford, Connecticut. The garden store in the center of New Haven is still being operated.

John Moss, his wife—he married the former Carol C. Wilkinson in 1941, who was then an assistant in Yale's Botany Department — and their two sons and two daughters live in a house built in 1715 in Pine Orchard, Connecticut. They "all like it very much."

John's brother, Donald, was also a student-gardener. When he left the Garden in 1940, he became supervisor of the Concord Resident Center of the National Youth Administration in Concord, New Hampshire. He is still living in Concord, still enjoys horticulture, but no longer in it professionally.

On the first day of this year, Charles M. Pecora became grounds superintendent on the estate of Mr. and Mrs. Paul Mellon in Upperville, Virginia. So he and his wife(whom he met while they were both students at The New York Botanical Garden) and their three children have been getting accustomed these past eleven months to their new surroundings. For the preceding eight years Mr. Pecora was superintendent of "White Gates Farm," the estate of Mr. and Mrs. Arthur M. Anderson in Bedford Hills, N. Y.

While located in Westchester County,

Wilbur E. Wright shows City Manager Robert P. Aex the view of Rochester's lilacs which appeared in color on "The Famous Gardens of America" calendar for 1956

R. E. Weidner surrounded by his family and tropical plants in his Buena Park Greenhouses

Mr. Pecora exhibited extensively at the shows of local horticultural societies, at the shows of the Horticultural Society of New York, and at the International Flower Show, and carried home a number of trophies. He also instructed several classes in the Educational Program of The New York Botanical Garden.

When Nick Pecora became superintendent of Mt. Ararat Cemetery in Farmingdale, Long Island, ten years ago, only one-third of its eighty-eight acres was partly developed; the remainder was in scrub oak. It has been Mr. Pecora's responsibility to develop three or four acres each year. With the aid of twelve men, he makes and maintains lawn areas and annual and perennial beds, surveys and lays out sections for plots, constructs walls and roads, sells cemetery plots, plant material, and landscaping services, to mention but a few of the duties assigned to him.

In 1946, Mr. Pecora built a home on a two-acre lot in Dix Hills, Huntington, for his family of wife, son, and daughter. An acre of his home grounds is devoted to small nursery stock. He still enjoys bowling which he learned to play during his student-gardener days at The New York Botanical Garden, and he also finds time for an occasional game of his other hobby, golf.

The beginning of a wonderful and long-to-be-remembered experience occurred on a day during World War II when Robert Simpson's sister phoned him to phone Mr. Everett. As a result of that call, Bob found himself in a drug mission, headed by Dr. William John Bonisteel of Fordham University, to Mexico; Donald Dodds and Charles Gilly also accompanied Dr. Bonisteel.

After the usual shots and injections, the party left for Washington, D.C., to attend school for two weeks before departing as "ambassadors of good-will." The men were happy to reach Mexico City, with its altitude of seventy-two hundred feet above sea level and its fresh green countryside.

Before settling down to their serious mission, Dr. Bonisteel decided his companions should have special instruction in the Spanish language. Unfortunately, Bob Simpson couldn't take advantage of this opportunity—he was sent out on his first field trip. He had to plant and propagate such medicinal plants as pyrethrum, belladona, mint, cinchona, and to establish experimental stations in different parts of the country.

The change from the rural areas, where the Egyptian plow drawn by oxen was a typical sight, back to Mexico City with its refinements of living, was welcome. Once again, delicious food and varied entertainment were available.

At the end of the first year Mr. Simpson was sent to Baja, California, to take charge of a squill project. After the United States victory in Africa, the bulbs were dug and shipped to Denver where they were tested and numbered. Mr. Simpson was assigned to the propagation of these fifteen hun-

This is part of the six-acre natural lake or lagoon, very unusual in southern California, on the grounds of the Los Angeles State and County Arboretum

dred bulbs; some sixty to one hundred and thirty-five cuttings were made from each bulb and placed in coldframes in the open field on General Rodriguez's ranch. Six months later the toxic analysis of each bulb was sent to him; and from that point, special care was exercised with the highly toxic bulblets or cuttings. Later, in June 1946, about twenty-two hundred of the bulbs were transferred to the U.S.D.A. station at La Jolla, California.

On his return to the East, Mr. Simpson fruitlessly searched for desirable employment; then decided to open his own florist shop. After four struggling years, the "Locust Valley Florist" has its roots firmly established in the town of Locust Valley. The fifty-year-old cutter (sleigh) with Santa on the roof is now a tradition, and the small lighted Christmas trees at each shopkeeper's door is an outgrowth of an idea Mr. Simpson proposed six years ago.

His shop is now being converted to include "practical antiques," to take care of the summer slump in florists' flowers. Mr. Simpson also does landscaping during the warm weather months.

This former student-gardener has "two children, two cars, one shop, one house, one mortgage," and, in his own words, "that's a plenty."

George Spalding has seen quite a bit of the world since he departed from the Garden in March 1942 for Wayside Gardens, Mentor, Ohio, but he has returned to visit his friends here—as recently as May 1956 he traveled from Arcadia, California, to say "hello."

Nine months at Wayside Gardens, nine months at Paul J. Howard Nursery in Los Angeles, and then a twenty-eight months tour of duty with the First Division, U. S. Marine Corps—Mr. Spalding participated in the Peleliu and Okinawa campaigns and did occupation duty in Tientsin, China—and back to Howard's Nursery for another thirteen months. He transferred to Eastgate Select Nursery, and there he remained until the Los Angeles State and County Arboretum opened in January 1949. The past seven years have been interesting, for as horticulturist Mr. Spalding helped "to develop the arboretum from scratch" and he is now "the superintendent of a most challenging project."

Joseph Tansey, on completion of his training as a student-gardener, continued at the Garden as greenhouse foreman until April 1945. Then he spent a year at the Wright Aeronautical plant in Woodbridge, New Jersey, assembling engines for B-29's—a far cry from gardening. With the termination of the war "Joe" became superintendent of "Uplands," the estate of Mr. and Mrs. W. A. M. Burden, Mt. Kisco, New York. During the past ten years he has been responsible for developing, landscaping, and managing their residential properties in Northeast Harbor, Maine, Mt. Kisco, and Washington, D. C. This year an indoor tennis court, bath houses, underground shelter, library and expanded terrace, cutting and vegetable gardens have been completed; under consideration as future projects are additional greenhouses, a lake, bowling alley, and shooting range.

Busy as his estate responsibilities keep him, Mr. Tansey has served the National Association of Gardeners and the North Westchester Horticultural Society as president, has been chairman of planting of the Village Improvement Society of Mt. Kisco, and active in various horticultural, gardening and civic organizations. He also serves as an instructor in the Educational Program of The New York Botanical Garden.

On the recommendation of T. H. Everett, Ronald Townsend secured in April 1939 the position of superintendent of the estate of Mr. and Mrs. Edgar B. Stern in New Orleans, Louisiana. The gardens, comprising approximately eleven acres, were skillfully designed by Mrs. Ellen Shipman of New York City, including a sunken garden, native garden, brick-walled kitchen garden, and extensive turf landscaped for vistas. The majority of the plants for the native garden were obtained from the wilds of Louisiana and Mississippi.

Mr. Townsend's work was interrupted by his induction in December 1942 into the Army of the United States. He served for three years with the Corps of Engineers as instructor in camouflage, training Air Force troops prior to their overseas departure, and was discharged with the rank of captain. He resumed his position with Mr. and Mrs. Stern in December 1945 and brought back the garden development program, which had been halted by the war, to normal operations within a year. Among other things, twenty-one large camellias, in height from fifteen to twenty-one feet, were boxed and transported from various places in the state and in Mississippi and established in the sunken garden. Large magnolias and other trees, azaleas and gardenias were brought in to landscape the main residence.

In February 1947, Mr. Townsend assumed the duties of Superintendent of Huntington Library and Art Gallery and Botanical Gardens at San Marino, California, which he so aptly described in the November-December 1952 issue of The Garden Journal. A little more than seven years later, he was appointed Superintendent of Parks of the City of Pasadena. This city has set an example for other communities to follow in the establishment of parks, street tree plantings, golf courses, and other park activities. There are twenty-two parks in the system and more than one million, two hundred thousand acres. The department also includes maintenance of one hundred and ten thousand street trees, the "Rose Bowl," two golf courses, all the grounds and plantings around such buildings as the City Hall, Civic Auditorium, Hall of Justice, Main Library and all its branches.

Mr. Townsend leads a full and busy life; for, in addition to his responsibilities as park superintendent, he is a member and officer of a number of horticultural organizations, contributes to a number of publications, and lectures before garden clubs and civic organizations in his part of the country.

In introducing R. E. Weidner as a speaker, Charles Kline remarked, "Bob, while I was telling how many places you had worked, I suddenly thought, 'That guy could never hold a job'." Yes, Bob has moved around, but always in upward progression, and today he is co-owner and manager of Buena Park Greenhouses, Inc., at La Habra, California, specializing in foliage and tropical pot plants.

In July 1938, at the end of his days as a student-gardener, he was appointed gardener and continued in that capacity with The New York Botanical Garden until he accepted the position of propagation foreman, in August 1941, with Del Amo Nurseries in Compton, California. Two years

later he became greenhouse foreman of the Roy F. Wilcox Co., in Montebello; within another two years he was foreman at the Superior Nursery Co., in Los Angeles. Then, in 1947, he became his own "boss" when he bought an interest in Buena Park Greenhouses.

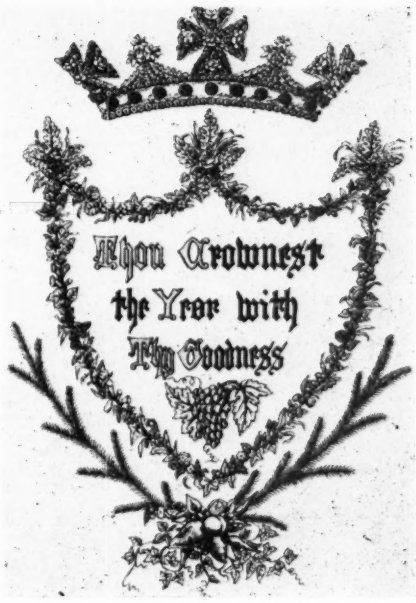
Mr. Weidner is very active in nursery and florists' circles — for instance, president of the Los Angeles Chapter of the California Association of Nurserymen in 1953; vice-president in 1955-56 and now president of the California State Florists' Association.

On completion of the two-year course at the School for Gardeners, Wilbur E. Wright majored in landscape gardening at Cornell. But before his studies were finished there, he enlisted in the U. S. Air Force, serving three and a half years as bombadier—one year with the 15th Air Force in Italy.

In 1945 Mr. Wright entered park service with the city of Rochester, New York, at the same time attending evening classes in business administration at the University of Rochester. A year later, he was promoted to Assistant Superintendent of Parks in charge of greenhouses, nursery propagation, and golf courses; four years later, another promotion — to Assistant Director of Parks, in charge of ten major and twenty-five smaller parks and the division of forestry. In 1950, following the death of Patrick J. Slavin, Director of Parks, Mr. Wright was appointed to his present position of Deputy Commissioner of Public Safety and Director of Parks. This position entails administrative control of four divisions — parks, playgrounds, forestry, cemeteries —and of two sub-divisions—adult recreation and maintenance.

Since 1950, Rochester's park system has expanded not only in acreage but in construction and equipment. The park nurseries contain several thousand plants, including many rare specimens, which will be used in the parks and public areas. Its new herbarium, made available through the purchase of a one-hundred-year-old "castle," has become the center of botanical and gardening information for the City of Rochester. Bernard Harkness, Taxonomist, is in charge of botanical collections, research, and development.

Wilbur Wright is also Director of the Rochester Garden Center and a



member of the Horticultural Committee of The American Institute of Park Executives.

Now that you have learned about some of the interesting and varied occupations of some of the former student-gardeners, don't you agree that the School for Gardeners of The New York Botanical Garden was an altogether worth-while project?

GRASSES AND CEREALS **(from page 180)**

Corn has obtained world distribution since the discovery of America. Grasses are such an enormous subject. He who starts to follow up the origin of some of our cereals finds himself in a maze. Maybe Henri Fabre was right, when he stated in his *Book of Insects:* "History celebrates the battlefields, whereon we meet our death, but scorns to speak of the plowed fields, whereby we thrive; it knows the names of kings' bastards, but cannot tell us the origin of wheat. That is the way of human folly."

The writer came across a small book entitled *Wheat, Rye and Barley (Weizen, Roggen, Gerste)* by E. Schiemann, which was published in Berlin in 1948. It is a follow-up of Dr. Schiemann's previous book on the *Origin of Cultivated Plants (Entstehunder Kulturpflanzen)* published in 1932. *Wheat, Rye and Barley* is in itself a sign of our times. It was originally only a part of her contribution to a new revised edition of Engler-Prantl's standard work on natural plant families. She had deposited the whole manuscript with the Berlin Museum of Botany, but the museum and with it the manuscript were destroyed during an air raid. Due to the paper shortage in Germany at that time, no copies of the manuscript could be made. The only copy the author had was of the part later published as *Wheat, Rye and Barley.*

The classical work on the origin of cultivated plants was written by DeCandolle in 1883. DeCandolle considered the distribution and number of certain varieties and the presence or absence of wild types. He based his conclusions on the works of Theophrastus, Dioscorides, and other old writers, archeological findings and philological evidence. How deductions about the origin of plants can be made on the basis of language comparisons has been masterfully shown by Arnold Wadler in his stirring book, *One Language, Source of All Tongues.* In one of his chapters, entitled "A Linguistic Bridge in the Atlantic," Dr. Wadler writes: "One question, however, is still to be answered: Are the islands of the Atlantic or Pacific not only remnants of former land-connections between the adjacent Continents, but also a kind of linguistic land-bridges between them? ... Tenerife, the largest of the Canary Islands in the Atlantic, offers a good opportunity for such an investigation."

We hear that people called the Guanche lived in Tenerife until the fifteenth century, before the islands were conquered by the Spaniards. The last vestiges of the Guanche language, some hundred words, have been preserved by British and Spanish scholars.

Ar-an means to farm in Guanche; we find the same root in the Greek AR-oo, the Spanish Ar-ar, and the Slavic OR-aty, all of which mean to plough. Or take the Guanche word for grain which is AFAR-o; it leads to the Hebrew BAR for wheat, the Latin FAR (wheat, flour, grain), the English BAR-ley, and the Korean POR-i which in Korean means barley. "Then we can conclude from these few instances," the author informs us, "that Guanche AR-an (farm) and AFAR-o (grain) can only be connected with the Eastern, not with the Western Hemisphere, that farming and agriculture came from the Orient, not from the Occident. This is in complete agreement with the findings of other fields of knowledge." Dr. Schiemann follows

up in her work mentioned before not so much DeCandolle's work, but the work of another noted authority on the origin and breeding of plants, the Russian N.I. Vavilov (*The Origin, Variation, Immunity, and Breeding of Cultivated Plants* 1949-50, Chronica Botanica). The latter added to DeCandolle's ideas considerations based on the anatomy and genetics of the plants as well as on their immunity to diseases. He concluded that many of the cultivated plants of first rank, the primary crops as he called them, had a diversified rather than a single origin.

In general he recognizes the following eight centers of origin of cultivated plants: 1. The Chinese; 2. The Indian, including Indo-China and the Malay-Archipelago; 3. The Central-Asiatic; 4. The Near-Eastern; 5. The Mediterranean; 6. The Abyssinian; 7. The South Mexican and Central American; 8. The South American center of origin, which includes Peru, Ecuador, Bolivia as well as Chile, Brazil and Paraguay.

The number of species in the third, the Central-Asiatic center, is small; nevertheless this center is of great importance to us for here we have one of the habitats of common wheat. This central Asiatic Center includes northwest India, all of Afghanistan, Tadjikistan, Uzbekistan, and western Tian-Shan. Another habitat of wheat is the fourth, the Near-Eastern center which comprises the interior of Asia Minor, the whole of Transcaucasia, Iran, and highlands of Turkmenistan. Additional two centers of origin of wheat are the Mediterranean area and Abyssinia. Certainly wheat is a good example of what Vavilov means by "diversified origins" of cultivated plants.

Similarly corn had its origin in the Chinese, the South Mexican and American, as well as in the South-American centers; oats came from China, the Near-Eastern and the Mediterranean zones, and rye originated in the Central-Asiatic and in the Near-Eastern centers.

The cereal grasses of today are vastly different from the cereal grasses of old. "The story of the rivalry of the grasses is one of the most tantalizing of the unwritten chapters in the history of human civilization," according to H. E. Jacob. "All grain was once grass. The grains favored by civilization were grasses, whose seed pleased the taste of primitive man. But early man's crop of grass seeds was often pilfered before it could be harvested, not only by insects but by the force that propagated the waving meadows of grass — the wind. The wind shook the flowering heads of wild grasses so much that they cast their seed at the lightest touch. This was necessary for the perpetuation of the wild grass, but how was man to harvest ripened grain? The first task of man was, therefore, to break his favorite grasses of this bad habit. For millenia he cultivated only these individuals, whose seed clung to the ear for an unusually long time, and he succeeded. The wild grasses he metamorphosed into cultivated wheat, cultivated rye, and all the other grains that became the great nourishers of mankind. These new varieties have fruit which clings so firmly to the pedicel that it can be removed only by trampling, shaking, or beating, that is, by what we call threshing."

"The threshing floor," he continues dramatically, "is the battlefield between the tenacity of the stalk and men's hunger for flour." And he concludes: "How prehistoric man accomplished such a miracle of selective breeding is a mystery. Such transformations . . . were not again undertaken until the nineteenth century, by professional botanists working upon the basis of Gregor Mendel's laws of heredity." Grain has been with us since times immemorial. Our life is unthinkable without grain. The Roman soldier received a daily ration of eight hundred and fifty grams of grain, mostly wheat; cheese, fruits, and vegetables were irregular additions. Each group of ten soldiers carried with them a handmill. About half of the ration was ground to make porridge, the other half was used to prepare flat dry bread loaves, which could be used as reserve-food during their long marches. The renowned Vienna clinician, Dr. von Pirquet, is credited with the saying that essentially the Roman legionary has conquered the world with bread and with porridge. It is still true today that grain is our most basic food.

FERNS (from page 189)

cracked open in the manner of walnuts. These were cinnamon ferns (*Osmunda cinnamomea*). I had forgotten, but this was the fern which was my childhood source of delicious sweet-meats so eagerly harvested when the fronds were only uncurling fiddleheads. The base of each plant has at its center a hard, white core which is quite a delicacy to eat, with a nutty flavor and a suggestion of bitterness not unlike that of acorns.

This vacation booty was added to by finding the common polypody (*Polypodium vulgare*) growing out of a crevice in ledges high up on Mt. Megunticook in Camden, and by stumbling upon a magnificent stand of royal ferns (*Osmunda regalis*) growing among great brown boulders at the edge of Smith River in Alexandria when driving through New Hampshire. Perhaps more ferns next summer!

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BOOK REVIEWS

THE GUIDE TO ROSES. Bertram Park. 288 pages, illustrated in color and black and white; indexed. D. Van Nostrand, Princeton, N. J. 1956. (Printed in Great Britain) $5.95

This comprehensive and very competent book is well written and explicit. It is based on the author's actual experience for forty years in rose research and the painstaking care of three large rose gardens of his own, one containing over five thousand plants. His chapters on preparation of the soil, planning and planting, pruning, manure and fertilizers, pests and diseases; his very satisfactory descriptions of over thirteen hundred and fifty garden roses, with added selective lists of his own favorites; his chapters on propagation, hybridizing (which he himself practices), exhibiting (in which he has had distinguished success); his calendar of rose routine—all together make this an outstanding rose handbook.

It is a most charming record of his pursuit of the rose. In spite of his extraordinary knowledge of all the highways and byways of rose culture and experience, Mr. Park is neither didactic nor categorical. Even when he speaks of the centifolia as the "rose of Herodotus," he adds a footnote referring to Dr. Hurst, who stoutly held a contrary opinion. He presents a pursuasive brief in support of the fragrance of modern roses as against the partisans of the older roses, many of which, as he insists, had no fragrance at all. His thesis is that the modern rose is a great improvement on its predecessors, and that we are in the process of constant further improvement. He argues well for the proposition that the older hybrid teas, for example, have greatly deteriorated because of repeated budding, and that the older varieties must, therefore, make way for the new.

Mr. Park has startled English rose growers by insisting that *R. multiflora* and *R. laxa* (Froebel), from his own extensive experience, are better understocks in light sandy soils, even in England, than *R. canina*, the usual English understock.

Mr. Park is a vice-president of the National Rose Society (forty-five thousand members), and the editor of its rose annual and other publications; a member of the Floral Committee of the Royal Horticultural Society. He has received the M.B.E. and O.B.E., and is a *Chevalier du Merite Agricole*. Internationally, his services are in demand as a judge at every great rose *concours*. (I remember at Bagatelle last year, how the chairman of the judges called on him as a court of final appeal to determine an important rose award.) He holds a royal warrant of appointment as photographer, and has an artistic background which has served him well in making the photographs of roses which are so brilliantly reproduced in this book.

For American purchasers (and I hope there will be many) Mr. Park's advice as to selection, planting, and care of roses should, because of the differing soil and climatic conditions throughout the United States, be supplemented by Dr. Cynthia Westcott's *Anyone Can Grow Roses*, a second, revised edition of which appeared in 1955.

EDWIN DE T. BECHTEL
Mt. Kisco, N. Y.

THE COMPLETE BOOK OF ROSES. Dorothy H. Jenkins. 114 pages, illustrated (16 in color). Bantam Books, New York. 1956. 35c

The Complete Book of Roses is a valuable contribution to the home gardener's collection of handy, reliable guides.

Setting out with a fine introductory chapter on the history of roses, Dorothy Jenkins continues with an excellent description of new varieties of hybrid tea roses, with special emphasis on good growers. Equally recommended and discussed by the author are the older varieties of roses; but it seems to me that home owners with limited planting area should be informed that they are more likely to achieve the desired results more easily with the new improved varieties of roses.

The well-founded advice Miss Jenkins offers regarding planting time is worth heeding. She suggests that dormant roses be planted in the spring and potted roses in late spring. Regarding planting procedure, however, she recommends that hybrid tea and grandiflora roses be placed eighteen to twenty-four inches apart. My own experience has demonstrated that elbow room for roots and canes substantially influences the full development of a plant and therefore placing them thirty to thirty-six inches apart is a wiser policy.

I cannot agree with Miss Jenkins' preference for annual hard pruning of hybrid tea roses to produce the best flowers. On the contrary, I have found that by not pruning new bushes (except for dead wood) for two years, then pruning two- and three-year-old canes to the ground, a large plant is developed which will bear numerous, many petaled, richly colored roses.

Miss Jenkins is, perhaps, a little overcautious in recommending protection against weather-kill for all areas above the Mason-Dixon line. In the metropolitan area, I find that winter protection is unnecessary.

The author includes an excellent chapter on cutting and keeping roses and a thorough discussion on control of pests.

In the main, the gardener will find Miss Jenkins' book extremely helpful as a source of reference and of sound and thorough advice.

A. D. MOLLIN
Great Neck, N. Y.

CARNATIONS, PINKS AND ALL DIANTHUS. Montagu C. Allwood. 354 pages, illustrated, indexed. Charles T. Branford Co., Boston, Mass., 4th edition. 1955. (Printed in Great Britain) $6.50

This book, brought up to date, is obviously the work of one who loves his subject. It is written in a superb manner. The author is philosophical, humorous, and well aware of the changes that have taken place in the horticultural world in his lifetime, this latter point being well emphasized with gentle irony in the various prefaces to the book.

The changes in world conditions, as it affected the author's work, are tabulated. A complete picture of the evolution of the perpetual flowering carnation is given with due credit rendered to the work of other hybridizers in this field. The author's work in hybridization is given in detail, with many illustrations in the Dianthus section, and I found his illustrated evolution of *Dianthus Allwoodii* fascinating.

Practical knowledge is the author's theme and here we have it from one who proudly states that there is no role from crock boy to carnation specialist in the horticultural world that he has not filled.

I do not agree when the author belittles his literary style. To one who grew up in the same horticultural period, the book has great appeal. It will, I am sure, be considered delightful literature by any reader interested or not in carnations.

I find none of the dogmatic writings of the pseudo expert, but an acute knowledge that all horticultural practices must be flexible and adapted to the climate in which one gardens.

A chapter is devoted to a detailed monthly schedule of work in growing carnations and dianthus in the greenhouse, and outdoor garden.

Diseases and their cures in many parts of the world are given adequate attention.

The scientific approach to hybridization is well done with due appreciation of the Mendelian theory. It is in these chapters that with gentle irony the author explodes the theory "that there are quick ways to remake nature." The debunking done here is of the best.

Cultural practices of many countries are given, from Scandinavia to Australia, from Africa to India and Japan, with much space devoted to the immense production of carnations in America.

Different types of greenhouse construction are well illustrated, suitable largely to the British grower. Detailed plans of possible dianthus gardens are included, these plans from the drawing board of Edward White, a famous London landscape architect.

A book to be read for pleasure and education — the pleasure enhanced by the knowledge "that here writes a man who knows whereof he writes."

G. H. GILLIES
Huntington, L. I.

PINKS. SELECTION AND CULTIVATION. F. R. McQuown. 176 pages, illustrated, indexed. Charles T. Branford Co., Boston, Mass. 1955. (Printed in Great Britain) $3

The author, president of the British National Carnation Society, writes of his experience with garden pinks. Educated as a scientist, he clearly shows where good gardening practices are to be preferred to scientific theory.

Obviously written for the British Isles are the chapters on soil and sites, and the thorough preparation of the soil.

Varieties are listed in groups and the origin of these groups described. The natural species of *Dianthus* are given short shrift, but those species considered worthwhile are covered at length. In the chapters on plant foods and fertilizers it is a relief to find a writer who does not confuse the long range plan of soil improvement with fertilizing for the immediate needs of the plants. Here we find emphasis on the basic needs of the carnation family—the need for more potash and less nitrogen, than is found in ordinary fertilizer mixtures.

With tongue in cheek the author admits that many times "the same methods under similar conditions produce different results."

Planting, cultivating, and all-year care are dealt with at length, even to advice on the best time of day to cut the flowers.

Pests—from aphids to rabbits—have their chapter with suggested methods of elimination, some of the latter being amusing.

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The author's scientific training gives a better approach to sounder methods of combatting the many diseases that attack the *Dianthus*.

Propagating by cuttings is covered in minute detail — obviously, as the author states, for the amateur. The selection of only plants of good constitution for propagation is stressed. Exception must be taken to the statement "that newly rooted cuttings would not survive a journey by mail." The specialist who ships rooted cuttings from sand by the million would smile at that statement.

Growing from seed is given the same minute attention.

Exhibition and the many pitfalls are covered with a fine sense of humor and tolerance—the number one rule for exhibitors being in larger print, "Read the Schedule."

Chapters on elementary and advanced breeding also reveal the author's scientific training and are written in fine style and in great detail.

References throughout the book to the assistance given by the Allwood Brothers are frequent. There is also a graceful acknowledgment to Roy Hay for editorial help.

A very complete index closes a book that gives a wealth of information to both amateur growers and professional. The former may practice with profit the growing methods and the latter absorb the history and knowledge of the *Dianthus*.

G. H. GILLIES
Huntington, L.I.

THE COMPLETE BOOK OF LAWNS. F. F. Rockwell and Esther C. Grayson. 190 pages, illustrated, indexed. American Garden Guild and Doubleday, Garden City, N. Y. 1956. $3.95

Although this book is only one hundred and ninety pages, including index, it lives pretty well up to its name, and is an attractive as well as a definite guide to home lawn-making; perhaps the best book of its kind to date. For this is a perennial and never-ending subject and problem to home owners and all those who have charge of home and institutional grass plots.

Fred (Frederick Frye) Rockwell was one of the leading garden writers when I first came to New York in 1919 and was asked to select a horticultural editor for old "Farm & Fireside," on which I was a cub editor. I almost automatically chose Fred Rockwell because, for one thing, he was about the only one whose name stuck in my mind, except possibly the late E. L. D. Seymour. We had a farm audience and wanted someone who spoke their language.

Since then many books and magazine articles have come from his pen, and many other good works as well—he is a founder and first president of the Men's Garden Clubs of America. In recent years his output has been increased and its quality made even better by a happy "merger" with Esther C. Grayson as wife and co-author. This has been one of the most successful combinations of talent I am familiar with in the garden field.

The Rockwell lawn book has the advantage of being the product of long experience in both editing and gardening. It is national in scope and the tables and advice are so arranged as to be helpful to lawnmakers everywhere in the United States. As sources there are such as Prof. J. A. de France and the College of Agriculture of the University of Rhode Island, one of the centers of lawn grass research; also universities and experiment stations in Alabama, California, Oklahoma, Oregon, Pennsylvania, and Tennessee. Credit is given to such high-class commercial firms as O. M. Scott & Sons, F. H. Woodward & Sons, Inc., Vaughan's Seed Co., Max Schling, and to Dr. P. P. Pirone, Plant Pathologist of The New York Botanical Garden.

Such controversial problems as crab-grass and the so-called "wonder grasses" are handled in a rather broad way. For instance, the last word on the zoysias from Cornell is that they "are not likely to become important lawn grasses in New York State." Perhaps it is too soon to tell for sure.

Another minor criticism might be leveled at this book in that the price ($3.95) is rather high. But all hard-back books are dear now, and this is one that if properly used should pay for itself in a few years. On the whole a very good job, beautifully illustrated in both color and black and white, and a useful addition to current garden literature.

ANDREW S. WING
Riverside, Conn.

JAPANESE AND MINIATURE GARDENS. Leslie Woollard. 95 pages, illustrated. Dover Publications, Inc., New York. Second Reprint 1955. (Printed in Great Britain) 65c

This little book deals with miniature gardens for both indoor and outdoor use. The title is, perhaps, not fully descriptive because the Japanese gardens described are the type common in containers, rather than the outdoor type of Japanese garden which, even if miniature or small scale, is very much larger.

This excellent book should be of great interest to apartment dwellers and those interested in a gardening type of occupational therapy for hospitals. It should also be of interest to those living in houses with ample grounds and sunlight who are desirous of having miniature gardens for either indoor or outdoor use grown in bowls, pots, trays, window boxes, or the like.

This book is full of useful designs and suggestions and the material is well presented. Chapter headings include: Making and Fitting Troughs; Pools, Cascades and Fountains; Soil Foundation and Rocks; Miniature Landscape Gardening (Design); Japanese Gardens; The Japanese Method of Dwarfing Trees; A Guide to the Best Plants; Dwarf Trees and Shrubs; Looking After the Garden; Planting and Propagation; Garden Ornaments, Features and Figures.

There should be many to whom this informative, thoughtful and well-written book will be of interest. It will be a help not only to the many who already have gardening as a hobby but to the many more to whom gardening can become a hobby along the lines described.

EDWARD M. BRATTER
Scarsdale, N.Y.

THE ART OF GROWING MINIATURE TREES, PLANTS AND LANDSCAPES. Tatsuo Ishimoto. 143 pages, illustrated. Crown Publishers, New York. 1956. $2.95

Whenever I have visited an average little nursery in Japan, I have been impressed by the large percentage of container-grown dwarfed or "Bonsai" trees in relation to other potted ornamental plants. The foreigner cannot understand the importance and significance in daily life of these miniature trees, which originated in China a thousand years ago. They do, nevertheless, present an intriguing challenge even to the uninitiated, as proven by the fact that many servicemen stationed in Japan try to bring home a living "Bonsai." However, after encountering our quarantine barriers, very few of these imports can be kept alive.

The alternative is to try to fashion these dwarfed trees right here. Since this is a slow and tedious process, it offers an ideal hobby for many over-active and "chased" Americans, right in their own backyards. It is for such people, and adapted to American conditions, that *The Art of Growing Miniature Trees, Plants and Landscapes* was written, and richly illustrated, by Tatsuo Ishimoto.

The make-up of the book is excellent. Over half of the space is given to one hundred and ninety-eight really good, and mostly large photographs, printed on quality coated paper. The text is held to a minimum and in interesting, story-teller language, gives first the historical background, then the kinds of trees used, where to get them, how to prepare for planting, and, ultimately, their maintenance. Our more extreme eastern climate will call for special precautions, such as some cover during winter, which can be dispensed with in the author's California.

Examples of many different types of "Bonsai" in cultivation are pictured and suggest a wide selection which the fancier can use.

This book should inspire the kind of

hobby which would ideally help to slow down our living habits. The growing and training of miniature living trees, offers rewards in better health, with a deeper understanding of nature and her processes.

ALFRED B. GRAF
Julius Roehrs Co.
Rutherford, N. J.

CHINESE FLOWER ARRANGEMENT. H. L. Li. 122 pages, illustrated, indexed. Hedera House, Philadelphia, Pa. 1956. $4

Every flower arranger, garden enthusiast, and collector of Chinese art will enjoy this book by Dr. Li. Each illustration is a thing of beauty in itself. The book describes vividly the evolution of their magnificent vases made long before our Christian era.

The Chinese practised the art of dish gardening and flower arrangement over two thousand years ago. Ornamental gardening was developed, and the naturalist pattern is still the traditional style.

Floral art received new impetus with the coming of Buddhism to China in the fourth century. The Buddhist priests' passion for flowers was idealized in their temple offerings, and new symbols and ideas in the arts were adopted. However, flower arrangements were simple in nature and not as stylized as the Japanese. They were made to suit the place in the home they were to decorate and were an integral part of the room.

Their reverence and love of flowers is well illustrated in a treatise by a twelfth century author, who gave twenty-six conditions suitable to the enjoyment of one of their most beloved flowers — the Japanese apricot.

Included in this book is a translation of a sixteenth century author's essay on "Enjoyment of Flowers." This interprets the character and beauty of flowers in a fascinating Oriental manner.

Another author in this same century wrote a "Treatise on Vase Flowers" which deals with all kinds of containers, grading and preserving of flowers, and how to cut and arrange branches. This treatise has been translated for the first time and is a fitting summation of Dr. Li's delightful book.

HELEN H. BEEBE
Englewood, N. J.

AN EASY GUIDE TO COLOR FOR FLOWER ARRANGERS. Margaret Dodson. 54 pages, illustrated, indexed. Hearthside Press, New York. 1956. $2.50

This is a valuable book on a difficult subject, in which the problems inherent in color are resolved in clear and concise terms. Its compendious form, combined with the author's easy manner, lucid style, and meticulous observance of detail should find ready acceptance by both the novice and the advanced student desiring a refresher.

As a fitting complement to her main theme, the author ranges, albeit lightly, the gamut of flower arrangement, focusing attention on the all-important fact that the essential elements the flower arranger recognizes as scale, proportion, balance, rhythm, dominance, and contrast are as applicable to color as they are to design. As Mrs. Dodson so aptly puts it, "All principles dovetail and all work together to develop beauty, simplicity, expression and harmony."

The capricious propensities, the tendency of color in flower arrangements to undergo transition poses an omnipresent challenge to the arranger. How colors behave in a flower arrangement; the effect of light on color; how certain colors react in their association with other colors; the value of texture versus color are points that are clearly defined. Elaborate treatment is accorded the somewhat abstruse subjects of hue, value and chroma.

The magnificent and novel color wheel should be of great help in selecting flowers as well as color schemes.

The book is replete with beautiful illustrations, and embodies a store of useful information on all phases of color. Included is a ready-reference list of grouping material.

MARGUERITE MULLIGAN
Elizabeth, N. J.

SEAWEEDS AT EBB TIDE. Muriel Lewin Guberlet. 182 pages, illustrated by Elizabeth L. Curtis; indexed. University of Washington Press, Seattle, Wash. 1956. $3.50

Of the three or four American popular books on seaweeds produced over the years, the present is by far the most attractive. For the nature-lover on the West Coast it will be a welcome seaside companion. It is sufficiently definite to satisfy a good general amateur botanist but not technical enough to discourage one unfamiliar with the seaweeds. The descriptions are necessarily superficial, and this will offend the more knowledgeable by failing to differentiate the plants in question from others not included, but this is hardly avoidable. Most of the very conspicuous types of algae, such as the kelps, are included. The more varied smaller or more filamentous genera are quite reasonably restricted, but unfortunately the text does not adequately warn the reader respecting the complexities of *Cladophora, Ceramium,* and the like. The colloquial names offered are, perhaps, no more far-fetched than those applied to vascular plants. The "Notes on Sea and Shore" used as page fillers will interest the general reader.

The illustrations are gracefully and in respect to the larger plants quite adequately done, and accurate. The same cannot be said for the smaller. The figures of *Ahnfeltia plicata* surely do not represent that genus, lacking the characteristic branching; *Fucus furcatus* seems to have been drawn from stunted individuals. The illustration for *Enteromorpha compressa* would appear to the reviewer clearly to represent *E. prolifera,* and that for *E. plumosa* might represent almost anything of a filamentous nature. A few are offered to distinguish between species, without serving the purpose, as *Odonthalia lyallii* and *O. floccosa,* and those for the antithamniums. It would have been better to have left out all of this character, or to have drawn them accurately at handlens enlargement as one would see them when actually making an identification in the field. However, these things will trouble the amateur less than the professional scientist.

WILLIAM RANDOLPH TAYLOR
Dept. of Botany
University of Michigan

REVIEWS OF BOOKS FOR THE YOUNGER GENERATION
by Muriel Ortmeyer

SEE THROUGH THE FOREST. Millicent E. Selsam. 45 pages, illustrated by Winifred Lubell. Harper & Bros., New York. 1956. $2.50

Mrs. Selsam has provided us with another readable, entertaining, and scientifically accurate description of plants and animals living in the forest. Children will enjoy the idea of the forest as a series of tree buildings with animal, bird, insect, and plant tenants living on different levels, each at the story best suited to its own particular needs for food, protection, and climate.

This book would be a stimulating preparation for a walk through the forest when in the country or in a large, natural park. For younger children, five to seven years, a short portion might be read to them before starting out, another portion while resting in a quiet, grassy glade in the forest, and the remainder after returning from the walk. Since the book is written as if the reader were going on a walk in the forest with the author it almost demands to be taken along. Older children, eight to twelve, might enjoy the book on their own, either in or out of the forest.

Winifred Lubell's sketches are usually clear, fairly realistic and often charming pictures that describe the walk vividly.

THE FIRST BOOK OF MICROBES. Lucia Z. Lewis. 65 pages, illustrated by Marguerite Scott. Franklin Watts, New York. 1955. $1.95

An excellent introduction to that fascinating world, largely invisible to the naked eye, the microscopic world of the microbes, this book not only explains some of the distinctions between microbes that are plants and those that are animals but also describes some of the simplest and commonest examples of both types (molds, yeasts, algae, protozoa, etc.).

The importance of microbes in restoring balance in nature — breaking down dead matter to chemical elements as well as the

(continued on page 204)

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NEWS, NOTES and COMMENTS

Rose Museum. Jean Gordon, author of *Pageant of the Rose*, has opened a rose museum called "House of Roses" on one of the picturesque streets in St. Augustine, Florida, directly opposite the shrine of Our Lady of Lourdes. The books, prints, china, and other objects—all depicting the rose in one way or another—which comprise the exhibits in "House of Roses" have been shown in the Smithsonian Institution in Washington, D.C., the Rochester, N. Y., Museum, and in Portland, Oregon, Los Angeles and San Diego, California, Miami, Florida, and elsewhere.

Laurance Armour Memorial Fund Award. Fourteen public schools in Chicago were the recipients of the first Awards of Merit from the Laurance Armour Memorial Fund. The fund was established by Mrs. Armour, in memory of her late husband, to encourage an interest in gardening among school children. The Awards of Merit include twenty-five dollars worth of plants or garden materials to be used in the next school year.

The school publication of one of the winning schools, the Penn Elementary, whose two thousand pupils are almost all negroes, contained the following article:

"Room 315 contributed two drawings to the exhibit on plant and flower projects.

"Nature has richly blessed us with thousands of colorful flowers whose beauty brings us much joy. In the spring we see pastel colors in wild flowers—the violet, buttercup, and phlox with their delicate lavenders, yellows, pinks, and blues. As the summer approaches comes the marigolds, zinnias, and poppies with their brighter colors. In the fall we enjoy the hardier flowers—the asters and the chrysanthemums with their bold colors.

"From these flowers we learn to use colors, and our drawings show how flower colors are used in design. In the overall pattern, we have used the heavy, strong colors.

"Flowers prove what the poet said, 'Beauty is a joy forever.' Delores Pearson, Room 315-8-A."

The Gerard Society. Mrs. Paul Moore of Convent, N. J., and Dr. Arthur H. Graves, curator emeritus of the Brooklyn Botanic Garden, have been made honorary members of the Gerard Society which was organized in Falls Village, Connecticut, in January 1956. Both Mrs. Moore and Dr. Graves have done much to stimulate interest in herbs, especially among young people, and have used their resources for the encouragement of horticulture with particular emphasis on plants useful to man. Mrs. Moore is also a contributor to the Founder's Fund; other donors include Mrs. Matilda Frelinghuysen, Mrs. Gregory H. Gaylord, Mrs. Garnett Day, and Mrs. H. W. Schroeder.

Mrs. Mortimer J. Fox, herb authority and author, presented plants to the Gerard Society's garden, including *Ruta montana, Thymus caespitosus,* pink rosemary, *Lavendula Stoechas, Teucrium fruticans* and *Ocimum Kilimanjaro.* Among the treasures purchased for the Society's library are *A Curious Herbal* by Elizabeth Blackwell, 1737, *A Niewe Herball* by Dodoens, 1578, and a manuscript journal of a Maine farmer written in 1794.

Wayside Gardens 1957 Introductions. The Wayside Gardens Company of Mentor, Ohio, announce the introduction, during spring 1957, of some little known plant material.

Buddleia 'Hever Castle' (plant patent applied for) is the result of a cross between *Buddleia alternifolia* and *B. caryopteridifolia*; it originated at Hever Castle, the residence of Lord and Lady Astor and in 1955 was awarded the Reginald Cory Memorial Cup of the Royal Horticultural Society for the best hardy hybrid shrub of the year. The new buddleia forms a bushy, dense, much-branched shrub. In late June and early July it bears globe-shaped, lavender-colored, fragrant flower clusters that grow upright, not on pendulent branches as is the case with *B. alternifolia. Buddleia* 'Hever Castle' is hardy; it has withstood below zero temperatures without damage during the past three winters at Wayside Gardens.

Forsythia 'Beatrix Farrand' is named in honor of one of America's foremost landscape architects. This shrub, which originated at the Arnold Arboretum in Jamaica Plains, Massachusetts, grows vigorously and makes a large symmetrical bush, six to eight feet tall. The deep golden-yellow flowers measure as much as two inches in diameter.

'Notcutt Purple Fringe' is the name by which this shrub is more likely to become known than by its full name, *Rhus cotinus foliis purpureus* Notcutt var. (patent applied for). It was a sensation when first exhibited in England, where it originated, and was turned over exclusively to Wayside Gardens for introduction in this country. The foliage is incomparable—a rich claret in autumn, it is even an intense color when young. The feathery plumes in June and July are large and also of a rich color.

Spiraea 'Swan Lake' is a fine form of *Spiraea trilobata* from North China and Siberia. It grows three to four feet tall; has thin, interlacing twigs and dark green, three to five-lobed, gooseberry-like leaves; and produces profusely its white flower clusters 'Swan Lake' is an ideal shrub for the small garden.

Dr. Benjamin Duggan died on September 10, 1956, at the age of 84. Following his forced retirement from the University of Wisconsin in 1943 because of his years, he was engaged by Lederle Laboratories of Pearl River, N. Y., as research consultant. There he led a group of scientists in investigations of antibiotic drugs, and in 1946 a golden-colored mold appeared and was labeled A-377. After tests had proved its effectiveness, it was released as aureomycin.

Dr. Duggan taught botany at the University of Missouri and at Cornell University, taught and conducted research at the Missouri Botanical Gardens, and did special work with the U. S. Dept. of Agriculture for several years.

Trees Saved by Putnam Hill Developers. In these days when bulldozers strip the land, under real estate development, of all vegetation, it is an exciting experience to be able to point to a company which is saving valuable trees.

At considerable expense—conservatively estimated at $100,000—Chutick and Sudakoff, the developers of Putnam Hill Apartments in Greenwich, Connecticut, are preserving some of the finest evergreen and deciduous trees to be seen along the eastern seaboard. These trees—magnificent weeping, cutleaf, and copper beeches, Sargent's weeping hemlock, Atlas cedar, Chinese umbrella-pine, and others—were growing on the estate formerly owned by the late Jeremiah Milbank. Mr. Milbank acquired the property in the 1880's and planted many trees, importing a number directly from Holland.

Before Chutick and Sudakoff bought this property for luxury apartment buildings, they engaged J. J. Levinson, former chief forester of the City of New York and now lecturer in forestry at Yale University, to develop a landscape plan and supervise the preservation of the trees. This necessitated blasting away tons of rock and creating fill so that two of the buildings could be set back from their original sites, erecting walls, extra grading, as well as enclosing the precious trees in adequate framework to protect them from damage while construction work was under way. One hundred and ninety-four trees have been preserved around the apartment buildings, one hundred more on the steep hillside.

"THINK THREE TIMES,
WHEN BUILDING,
Before Allowing the Destruction
of a Tree on your Property"

1) Trees have economic value
   Tree valuation as a science makes it possible to measure the value of your trees—a valuation acceptable to such unemotional authorities as the Internal Revenue Bureau
2) Trees have protective value
   They provide shade from the sun
   They provide windbreaks against wind, rain, and storms
   Their extensive root structure holds the soil against washing
3) Trees have aesthetic value
   They are beautiful within themselves
   They soften the outlines of your house
   They are essential to effective landscaping

The cost of saving a natural stand of trees is slight compared to the cost of replacing them. Yet you cannot logically blame a contractor or developer for bulldozing the trees from your land or around your house, if you are unwilling to pay the cost of preserving them. This cost is usually nominal and will probably be only a fraction of the cost of replacements. In addition to saving years of growing time, the natural stand is generally much better than those you can plant.

An uncomplicated example of tree value appeared in *Horticulture*: "On a small village property of less than sixty feet, a saltbox type of house was over-spread by a massive elm estimated to be three hundred years old. A firm offer of $24,000 was made for the property in the spring of 1954. Before the deal was consummated the tree was destroyed by hurricane, but the house was untouched. Without the charm of the protecting tree, the house and lot brought only $15,000. The difference in the before and after price values that tree at $9,000."

THE BEDFORD GARDEN CLUB

Heavy boarding protects an unusually large Sargent's weeping hemlock (left) against damage while construction progresses. The towering tree, much higher than the four-story building in the background, is a purple beech. Just in front of the beech is a fine specimen of Japanese maple. At a cost in excess of $100,000, these trees and nearly two hundred others have been preserved by Chutick & Sudakoff, builders and owners of the Putnam Hill apartments.

In view of the concern about the loss of valuable trees, the above distributed by the Bedford Garden Club will be of particular interest to our readers. THE EDITOR

Gladiolus 'Picardy'

Nearly the entire July, 1956, issue of The Gladiolus Magazine is devoted to articles about one variety of gladiolus, 'Picardy,' and the man who originated and introduced it just twenty-five years ago, Dr. E. F. Palmer of Vineland, Ontario. The material presented in this forty-four page commemorative issue reveals the profound influence which this unheralded flower had upon the future of all gladiolus throughout the world.

From the beginning, Dr. Palmer knew that his seedling, recorded in his notebook as No. H6031, had good color, vigor, and long-lasting qualities as a cut flower. Little could he guess, however, that his origination would become the most popular cut flower of all time.

Elmer Gove recounts that when 'Picardy' was first exhibited, it was a sensation because of its beautiful color, size, and exceptional lasting quality. Mr. Gove quotes J. D. Long as saying that the flowers could not be real; they must be made of paper.

The impact of 'Picardy' on the flower world is unfolded in nine articles. Not only did 'Picardy' revive universal interest in gladiolus growing, but also it was the foundation of a new gladiolus cut-flower industry in Florida which has flourished mightily.

Perhaps of more importance to gladiolus fanciers was the great stimulus which the introduction of 'Picardy' gave to hybridizing. It took time to learn that only big 'Picardy' bulbs would set seed in the North, but during the past quarter century, over six hundred and eighty varieties have claimed 'Picardy' as one of their parents. All are recorded in a lengthy list which includes such present-day favorites as 'Corona,' 'General Eisenhower,' 'Patrol,' 'Spic and Span' and 'Stoplight.' And many hundreds more contain 'Picardy' in their blood, including both of the first All-America Gladiolus selections for 1956, 'Apple Blossom' and 'Royal Stewart.'

So many millions of bulbs of 'Picardy' have been grown that the variety has given rise to an important list of sports, too, which have been named and introduced, the most famous being 'Leading Lady.'

All the material gathered together—the biographical data, historical notes, reports about 'Picardy's' influence here and in Europe, hybridizing records and sidelights—make this issue invaluable for permanent reference. It's published by the New England Gladiolus Society at Horticultural Hall, 300 Massachusetts Avenue, Boston 15, Mass.

PAUL F. FRESE
White Plains, N. Y.

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LOOKING FOR A GIFT?

MEMBERSHIP IN
THE NEW YORK BOTANICAL GARDEN
IS THE BEST POSSIBLE GIFT

•

This European purple beech, with a trunk twenty feet in circumference, will shade one of the five Putnam Hill apartment buildings in Greenwich, Connecticut

BOOK REVIEWS (from page 201)

uses to which man has put microbes in fermenting juices, raising bread, making cheese, vinegar, etc., and separating fibers in making linen, are described briefly but clearly. Nor does the author forget to tell some of the thrilling stories of the great men who first theorized about, discovered, and combatted the microbes that attack men and cause disease.

There is a glossary giving pronunciation and meaning of the simple technical terms used in the book and a short index as well. This book would be most useful to young scientists eight to fourteen years old and excellent for a Junior High School library. Many clear drawings by Marguerite Scott will help youngsters in their sketches of the microbes they see with toy microscopes. The book would be even more useful at school and at home, if it included a number of simple experiments for children to perform.

THE PLANTS WE EAT. Millicent E. Selsam. 123 pages, illustrated by Helen Ludwig; indexed. Wm. Morrow & Co., New York. 1955. $2.50

This book should prove fascinating to inquiring minds in the eight-to-twelve year group or to anyone who wants an easy-to-read explanation of the ways in which people are dependent on plants, and how the history of plants has been traced by scientists and others.

Chapters are logically headed by the part of the plant which is edible: "The Roots We Eat" (stems, leaves, flowers, fruit). Each chapter contains the interesting story of the development of our common food plants, their history and changing uses. Mrs. Selsam knows how to select the kind of information that appeals to curious youngsters: tomatoes were once considered poisonous; the Irish potato came from South America originally; cabbage, kale, collards, Brussel sprouts, broccoli, and cauliflower were developed from the wild cabbage.

The author has cannily included experiments, simple enough for a child to perform indoors or outdoors with ordinary household equipment; experiments that will help the young reader understand visually the miracle of plant life.

Helen Ludwig has supplied simple and clear diagrams. A small index is useful, especially if the book were to be used in a school library.

PLANTS THAT FEED US. Carroll Lane Fenton and Herminie B. Kitchen. 95 pages, illustrated by Carroll Lane Fenton. John Day, New York. 1956. $2.75

Like Mrs. Selsam's book on food plants, this book also provides children with interesting facts about the plants they see every day. This is a larger, more detailed book, written in a less conversational style. However, like the last book, it avoids botanical names and technical terms that children often find dull, slow reading. These authors also have many interesting stories to tell of the history of common food plants and the origins of their common names. Most children will be amused to learn that Chicago comes from an Indian word "shi-Kai-O," meaning a place where the wild garlic or "shikako-ak," the skunk plant, grows.

Unlike the Selsam book which organized the plants by the part eaten, this book discusses one common food plant at the beginning of each chapter and then tells about other food plants or wild flowers that belong to the same family.

The length, style, and plant family organization makes this book more interesting for older children ten to fourteen. It would be a good second book on food plants and useful in Junior High Schools. It lacks an index and suggests no experiments. Mrs. Fenton's drawings are clear illustrations of plants in the same family.

THE FIRST BOOK OF GARDENING. Virginia Kirkus. 65 pages, pictures by Helene Carter. Franklin Watts, New York. 1956. $1.95

In a chatty, "man to man" style the author takes the young reader through all the necessary steps of gardening from drawing a garden plant, to fighting plant insects and harvesting the crop. Mrs. Kirkus wisely urges beginners to start small, explaining that the center of the garden should be possible to reach from the outside edges, since working between the rows may hurt the plants or pack the earth too hard for them to grow. The best kind of soil and location for the garden are described in a manner which will help a child to judge for himself. How to order from seed catalogues is an important section. Common garden vegetables are briefly discussed by the relative ease of growing and time of maturation. A map of the United States shows the best time of planting in all areas. Nor does the author forget to mention the simple tool needs, efficient ways of using them and how to store them. Large black and green sketches by Helene Carter show all of these things clearly.

How to plant, how to thin, and how to weed are by no means omitted from this useful book. The author does not end with harvest time but adds a chapter on fall planting of bulbs and the making of small winter gardens indoors. Unfortunately, instructions for these are brief and sketchy.

A six-year-old with some adult help and older children on their own would find that this book supplies all of the basic "whys and wherefors" of gardening.

There is an index and bibliography of additional children's books on gardening.

DESERTS. Delia Goetz. 64 pages, illustrated by Louis Darling. William Morrow & Co., New York. 1956. $2

For any child who has seen Walt Disney's *The Living Desert* or for those just curious about the wide world this book will have appeal.

In simple, straightforward style the author explains the geographic conditions that create deserts, the areas of the world where deserts are found, and the similar characteristics and differences of various desert areas.

Louis Darling's panoramic and realistic illustrations are fitting in sepia. His pictures show the plants, animals, and people that live in the famous deserts of the world: Mojave, Gobi, and Sahara.

Children will be excited to know of a small American bird, the road-runner, that fearlessly attacks rattlesnakes just as the little mongoose has gained fame in Asia as a plucky enemy of the cobra.

How people have lived in deserts as nomadic herders, hunters, and traders in the past, and how today men are extracting oil and minerals from deserts or making them fertile by irrigation is all equally fascinating information.

The author might also have touched on soil erosion and how deserts can be man-made through wanton over-cultivation and carelessness as in Palestine and China. It would be important for children to be told how they can help to prevent erosion in simple ways. However, these omissions do not prevent the book from being informative and educational as well as interesting.

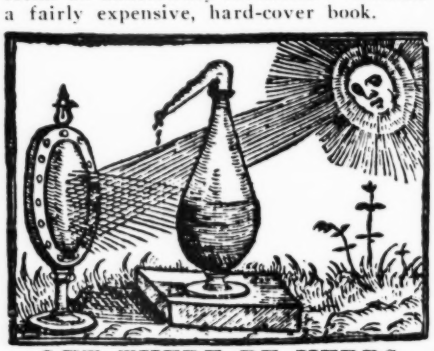
NATURE QUIZ BOOK. Anne Orth Epple. 650 questions and answers about the Wonders of Nature. Platt & Munk, New York. 1955. $1.25

By older people smitten with "quizitis" and by youngsters from six-years up, this book may be well thumbed in a very short time. Certainly for parents with pre-school children in the "why" stage, this book should provide not only an answer to their prayers but also to their youngster's never ending questions. Quiz A, for example, includes: What is the largest animal that ever lived? Which animal lives longest? Can any bird fly backwards as well as forwards?

Answers are sometimes given in one word but often include additional information or limiting qualifications. The answers are found at the back of the book.

The chief disadvantage of quizzes of this kind is the hodge-podge form in which the information is gained. Although the book is divided into twenty-six questionnaires of twenty-five questions each, there has been no attempt to group questions around any logical idea, either by types of animals and plants or by questions of size, speed, longevity, etc.

The page format with space for scoring seems an unnecessary invitation to mutilate a fairly expensive, hard-cover book.



LET THERE BE HERBS

It is customary to think of New England as the center of herb history in this country, perhaps, due to the accounts of early travelers in the colonies who wrote of seeing "such plants as are common with us in England" growing there. Precious plants of seasoning and physic went with the settlers to every part of the United States. California, in particular, has a rich tradition of herb usage which is kept alive by some individuals today. One such person whose herb interest stems from family tradition is Laura Hartman of Alameda, California.

Mrs. Hartman is a descendant of the first Spanish settlers, growing up on the Spanish grant rancho of her grandparents. When the California editor of The Herb Grower Magazine visited Laura Hartman recently, she described the experience as being like "stepping into the pages of an herb book." Everywhere in the house was evidence of the handicraft and herbal delights to which Mrs. Hartman has given years of effort, both for her own pleasure and for educational exhibits.

On the dining room table was an herb arrangement composed of foliage of gray

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THE GARDEN JOURNAL

OF

THE NEW YORK BOTANICAL GARDEN

DOROTHY EBEL HANSELL

Editor

VOLUME VI

1956

Published bimonthly by The New York Botanical Garden

BRONX PARK, NEW YORK 58, N. Y.

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and green herb plants. Arranged around it was a very colorful and artistic display of herb dyes and samples of cloth dyed with them. Yarns and pieces of silk, cotton and wool had been dyed with colors made from all sorts of roots, barks, petals, and leaves. Thirty years before Mrs. Hartman had begun with woad, *Isatis tinctoria*, the plant of the mustard family which gave the dye used by the Picts in ancient Briton to paint themselves blue. Since that time she had experimented with a wide range of materials. As Mrs. Hartman described it:

"The person who wishes to dye cloth in the old-time way first has to run an obstacle course. Out of the great wealth of dye materials, one first thinks of getting a good color and then must figure out the best dye or combination of dyes to produce that color upon the type of cloth to be dyed. Some of the vegetable dye colors take well on wool but not on cotton. Others are not fast color. Who has not boiled Easter eggs with onion skins? The same yellow brown skin of the onion makes a fine burnt-orange with alum, on wool. Parsley and spinach dye green when used with alum. The color of a flower does not necessarily indicate that the same color will result from the dye."

Few books cover the range of vegetable dyes completely. Once the technique of using mordants with the dye plant has been mastered, much individual research must be done to attain the right shades and a degree of color fastness. Books on the subject have not been popular enough to remain in print but there is a Department of Agriculture pamphlet No. 230, December 1935, entitled "Home Dyeing with Natural Dyes." A really excellent little book with photographs of the processes was written by Sallie Pease Kierstead, called *Natural Dyes* and published originally by Bruce Humphries. It is hoped that the increasing demand for information on the subject made by hand-weavers and handicrafters will bring it back into print.

Mrs. Hartman has collected information about the Indian dye techniques and experimented with many native plants of the Far West. From her garden zinnias and marigolds have yielded fine yellow dyes while golden-rod of the roadsides can be substituted for either one. Quite a range of colors have been obtained from celandine, yarrow, agrimony, hops, beets, and purple cabbage. Many of the prepared dyes can be seen on shelves in her home. The oldest known dye that is still being used is a cousin of migonette called weld, *Reseda luteola*, which, Laura Hartman says, is still in commercial use today.

As a participant in an art always becomes more impressed with the excellence of the experts, Mrs. Hartman loves to tell stories of the sources of brilliant colors used by the Indians. "The Southwest tribes bleached their deerskins with yucca buds before dyeing them, then fixed the colors with the juice of the agave plant. Indians of the Northwest mixed their earth colors with the oil of salmon eggs to make lasting paints for their boats, houses and totem poles. During the last war, an ingenious art teacher in one of the Alameda schools taught his pupils to make their own paints from materials gathered in the hills nearby. They ground their colors fine in a mortar, then mixed them with egg yolk. This method was used by the ancients for beautiful and long lasting paintings."

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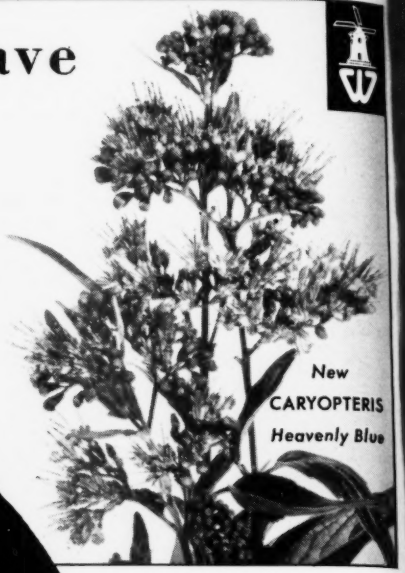

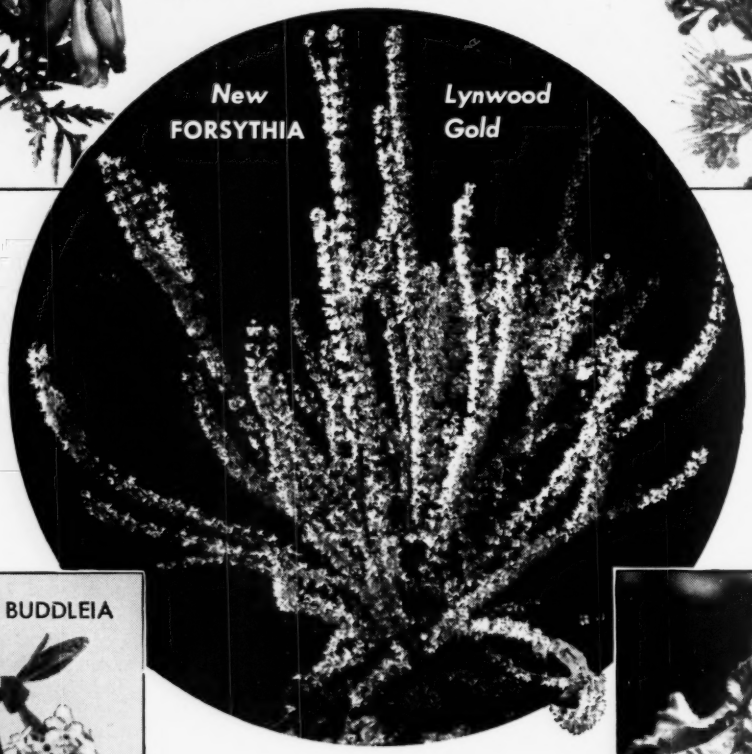

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